Anritsu

SERVICE MANUAL

DIGITAL TRANSMISSION ANALYZER

ME520B

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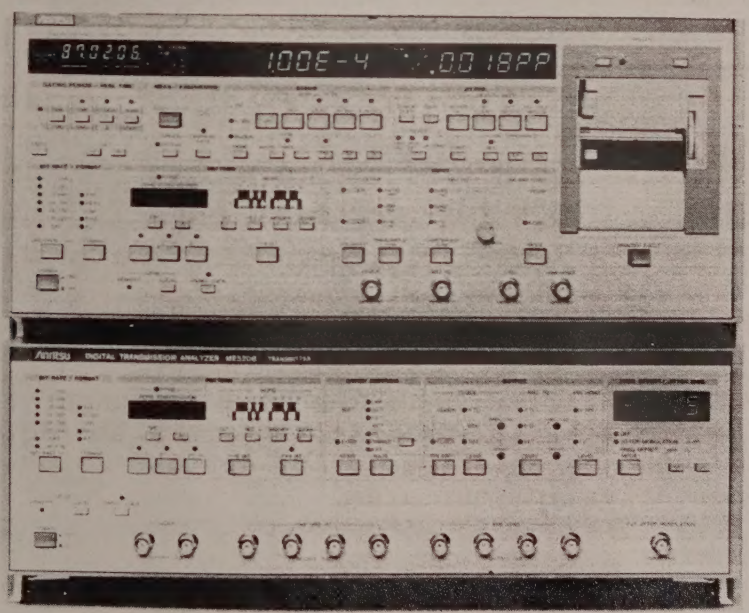

Applicable Serial Nos.
start from M36588
1992.01 Ver. III
Printed in Japan
1992.04 x 300 N-32(Y)

CERTIFICATION

ANRITSU CORPORATION certifies that this instrument has been thoroughly tested and inspected, and found to meet published specifications prior to shipping.
Anritsu further certifies that its calibration measurements are based on the Japanese Electrotechnical Laboratory and Radio Research Laboratory standards.

WARRANTY

All parts of this product are warranted by Anritsu Corporation of Japan against defects in material or workmanship for a period of one year from the date of delivery. In the event of a defect occurring during the warranty period, Anritsu Corporation will repair or replace this product within a reasonable period of time after notification, free-of-charge, provided that: it is returned to Anritsu; has not been misused; has not been damaged by an act of God; and that the user has followed the instructions in the operation manual.

Any unauthorized modification, repair, or attempt to repair, will render this warranty void.

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ALL OTHER EXPRESSED WARRANTIES ARE DISCLAIMED AND ALL IMPLIED WARRANTIES FOR THIS PRODUCT, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF DELIVERY. IN NO EVENT SHALL ANRITSU CORPORATION BE LIABLE TO THE CUSTOMER FOR ANY DAMAGES, INCLUDING LOST PROFITS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES, ARISING OUT OF THE USE OR INABILITY TO USE THIS PRODUCT.

All requests for repair or replacement under this warranty must be made as soon as possible after the defect has been noticed and must be directed to Anritsu Corporation or its representative in your area.

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WARNING

NO OPERATOR SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION

FOR CONTINUED FIRE PROTECTION REPLACE
ONLY WITH SPECIFIED TYPE AND RATED FUSE.

WARNING

NO OPERATOR SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION

FOR CONTINUED FIRE PROTECTION REPLACE
ONLY WITH SPECIFIED TYPE AND RATED FUSE.

Note: ⚠

(1) The instrument is operable on a voltage of 90 to 138 Vac or 180 to 250 Vac by changing the switch of the power supply.

The voltage and current ratings are indicated on the rear panel when the instrument is shipped from the factory.

To operate on the other voltage, change the switch of the power supply. (See paragraph 3.5.1 and paragraph 3.6.1) The plate on the rear panel indicating the voltage and current ratings should be changed to the appropriate one. Order the plate from ANRITSU CORP. if needed.

(2) In this manual, the power supply voltage and current ratings are represented by ** Vac, *** A, and **** A, respectively.

(3) The relationship between power supply voltage and current rating is listed below.

** Vac (Workable)	(Transmitter) *** A	(Receiver) **** A
90 to 138 V	3.15 A	5 A
180 to 250 V	2 A	3.15 A

(1) The instrument is operable on a voltage of 90 to 130 Vac or 180 to 250 Vac by changing the switch of the power supply.

The voltage and current ratings are indicated on the rear panel when the instrument is shipped from the factory.

To operate on the other voltage, change the switch of the power supply. (See paragraph 3.3.1 and paragraph 3.6.1) The plate on the rear panel indicating the voltage and current ratings should be changed to the appropriate one. Order the plate from ANRITSU CORP. if needed.

(2) In this manual, the power supply voltage and current ratings are represented by ** Vac, *** A, and **** A, respectively.

(3) The relationship between power supply voltage and current rating is listed below.

** Vac (Workable)	(Transmitter) *** A	(Receiver) **** A
90 to 132 V	3.15 A	5 A
180 to 250 V	2 A	3.15 A

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SECTION 1

GENERAL

This is the Service Manual for the ME520B DIGITAL Transmission Analyzer. It covers the following information:

SECTION 2 MECHANICAL CONFIGURATION:

Describes how the various printed circuit boards (P.C. boards) are laid out.

SECTION 3 TROUBLESHOOTING AND ADJUSTMENT

Describes how to troubleshoot the equipment. Circuit diagrams for the ME520B are given in this section.

SECTION 4 REPLACEABLE PARTS:

Explains how to order replacement parts and the parts lists.

For specifications, operating instructions, performance check, and a detailed panel control description of the ME520B, refer to the separate operation manual.

SECTION 2

MECHANICAL CONFIGURATION

2.1 Introduction

This section will explain methods of disassembling the ME520B.

2.2 Disassembly

2.2.1 Separation of transmitter and receiver

As shown in Fig. 2-1 below, the receiver and the transmitter are locked together by 4 legs.

Fig. 2-1 Connection of Transmitter and Receiver

As shown in the detailed drawing of Fig. 2-2, the transmitter and the receiver are separated by lifting the locks.

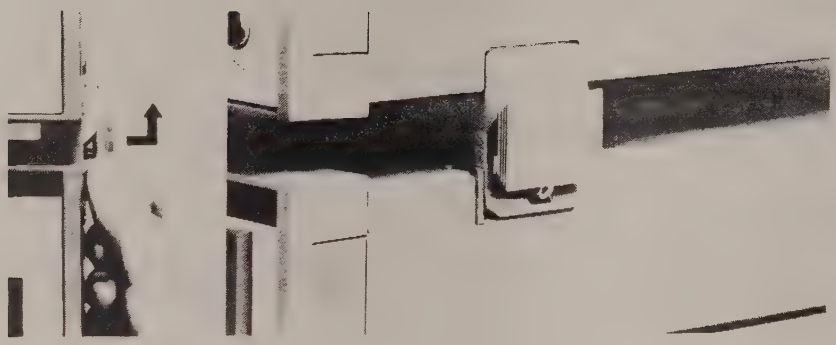


Fig. 2-2 Detailed View of Leg

2.2.2 Cabinet disassembly

ME520B transmitter and receiver cabinets are designed the same. Figures 2-3 through 2-6 are used for both cabinet disassemblies. The transmitter mechanical parts list is shown in Table 2-1 (a) and the receiver mechanical parts list is shown in Table 2-1 (b).

(1) Top cover removal (See Fig. 2-3.)

(a) Remove the two screws ⑭ at the rear of the top cover.

(b) Slightly raise the back of the top cover ⑩ , sliding it backward; separate the top cover from the front frame and lift off.

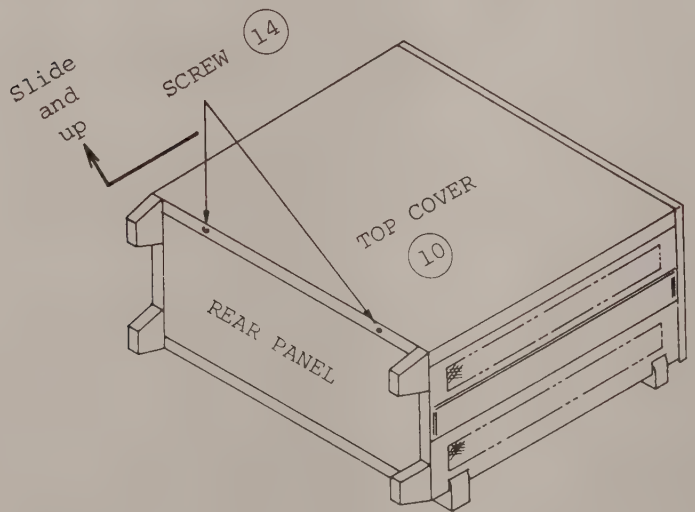


Fig. 2-3 Top Cover Removal

(2) Right and left side cover removal (See Fig. 2-4.)

(a) Using a screwdriver, open the screw covers on each end of the handle at the center of the side covers ⑫ .

(b) Remove the handle ⑨ and the side cover ⑫ by removing the screws ⑮ under the screw covers.

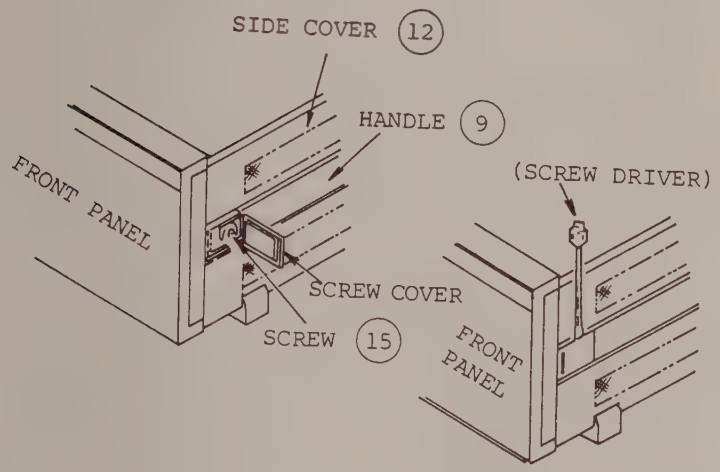


Fig. 2-4 Side Cover Removal

(3) Bottom cover removal (See Fig. 2-5.)

(a) Remove the two screws ⑭ at the rear of the bottom cover ⑪ .

(b) Remove the bottom cover by sliding it until it separates from the frame.

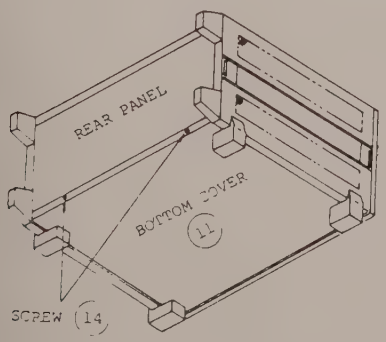


Fig. 2-5 Bottom Cover Removal

Table 2-1 (a) Transmitter Cabinet Mechanical Parts List

No.	PART No.	DESCRIPTION	REMARK	QTY.
(1)	32B7661	Frame, Front	1MW·3U	1
(2)	32B7665	Channel, Rear	3U	2
(3)	33B20662	Protector		4
(4)		NOT ASSIGNED		
(5)	32B7668	Channel, Top	350D	2
(6)	32B7669	Channel, Bottom	350D	2
(7)	349B73667A	Foot, Stack		4
(8)	34B73660B	Tape, Trim	3U	2
(9)	349B73661B	Handle, Side	350D	2
(10)	33B22451	Cover, Top		1
(11)	33B22511	Cover, Bottom		1
(12)	33B22469	Cover, Side		2
(13)	4BPS8S3	Screw		2
(14)	4BPS8S3	Screw		2
(15)	5FPS12S7	Screw		4
(16)	5FPS10S7	Screw		8
(17)	4NPS20S7	Screw		8
(18)	4SW-SU	Spring Washer		8
(19)	4WBS-B3	Plain Washer		12

Table 2-1 (b) Receiver Cabinet Mechanical Parts List

No.	PART No.	DESCRIPTION	REMARK	QTY.
(1)	32B7662	Frame, Front	1MW·4U	1
(2)	32B7666	Channel, Rear	4U	2
(3)	33B20662	Protector		4
(4)		NOT ASSIGNED		
(5)	32B7668	Channel, Top	350D	2
(6)	32B7669	Channel, Bottom	350D	2
(7)	349B73667A	Foot, Stack		4
(8)	34B73660C	Tape, Trim	4U	2
(9)	349B73661B	Handle, Side	350D	2
(10)	33B22451	Cover, Top		1
(11)	33B22511	Cover, Bottom		1
(12)	33B22471	Cover, Side		2
(13)	4BPS8S3	Screw		2
(14)	4BPS8S3	Screw		2
(15)	5FPS12S7	Screw		4
(16)	5FPS10S7	Screw		8
(17)	4NPS20S7	Screw		8
(18)	4SW-SU	Spring Washer		8
(19)	4WBS-B3	Plain Washer		12

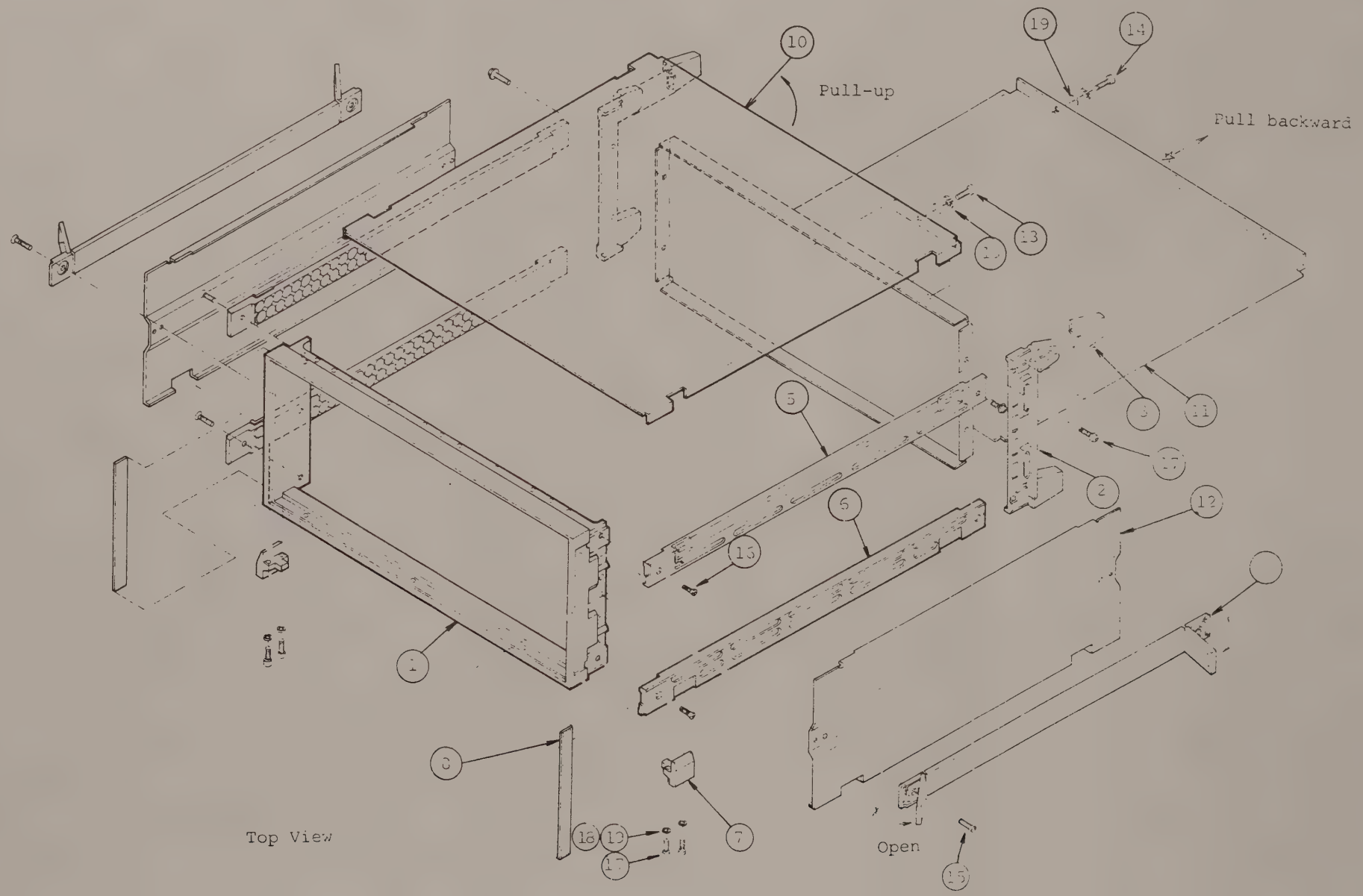


Fig. 2-6 Cabinet Disassembly

2.2.3 Transmitter Disassembly

The ME520B Transmitter Unit disassembly is done by Fig. 2-7 and its mechanical parts list Table 2-2.

At first remove the top cover, the two side covers, and the bottom cover as described in paragraph 2.2.2-(1), (2), and (3).

(1) Front Panel removal

Remove the top cover and the bottom covers as described in 2.2.2 (1) and (3). Then remove the front panel as follows referring to Fig. 2-7.

(a) Remove the three screws ⓫ on the top of the front panel.

(b) Remove the three screws ⓬ on the bottom of the front panel.

(c) After sliding the front panel slightly forward, the front panel and the Z6 P.C. board can be removed from the front frame.

CAUTION

After first removing connectors and cables protruding from the Z6 P.C. board, pull out the front panel.

---

(2) Rear Panel removal

Remove the top cover, the two side covers, and the bottom cover as described in 2.2.2 (1), (2), and (3). Then remove the rear panel as follows.

(a) Remove the two screws ⓭ on each side of the rear channel.

(b) Remove the rear panel by gradually sliding it backwards.

CAUTION

After first removing connectors and cables protruding from the rear panel, pull out the rear panel.

(3) Z7 Power Supply P.C. board removal

Remove the top, the side, and the bottom covers as described in 2.2.2-(1), (2), and (3). Then remove the case of the Z7 Power Supply P.C. board as follows.

(a) Remove the three screws ⓮ on the side frame.

(b) Remove the four screws ⓯ on the bottom frame.

(c) Disconnect the J2 connector ⓰ of the Z7 P.C. board from J2 on the main frame.

(d) Remove the Z7 P.C. board from the Z10 mother board by sliding the case forward. Then, slowly lift the case upward and remove it. After removing the case from the main frame, remove it from the P.C. board according to the following steps.

(e) Remove the two screws ⓱ on the top of the case.

(f) Remove the four screws ⓲ on the side of the case.

(4) Z1 CPU P.C. board removal

Remove the top cover as described in 2.2.2-(1). Then remove the Z1 P.C. board as follows.

(a) Remove the three screws ⓳ on the P.C. board.

(b) Disconnect the J1 and J2 connectors on the P.C. board.

(c) Raise the injectors ⑳ on both sides of the P.C. board up and slide them forward.

(5) Z2 CLOCK and Z3 PATTERN GENERATOR P.C. board removal

Remove the top covers and the front panel as described in 2.2.2-(1) and 2.2.3-(1). Then remove the Z2 and Z3 P.C. board as follows.

(a) Remove the two screws ㉑ on the top of the main frame and remove the L metal frame.

(b) Disconnect the J1, J2, J3, J6 and J7 connectors on the Z2 P.C. board.

(c) Disconnect the J5 and J6 connectors on the Z3 P.C. board.

(d) Disconnect the J15 connector on the Z5 P.C. board.

(e) Raise the injectors on both sides of the P.C. board up and slowly slide them forward. At this time, ensure that wires do not get by the frame.

(6) Z5 OUTPUT AMP P.C. board removal

Remove the bottom cover and the front panel as described in 2.2.2-(3) and 2.2.3-(1). Then remove the Z5 P.C. board.

(a) Remove the three screws ㉒ on the front frame.

(b) Disconnect the J14 and J15 connectors on the Z5 P.C. board.

(c) Disconnect the J16 connector from J6 on the Z3 P.C. board.

(d) Remove the Z5 P.C. board by gradually sliding it forward.

(7) Z6 DISPLAY P.C. board removal

Remove the front panel as described in 2.2.3-(1). Then remove the Z6 P.C. board.

(a) Remove the nine screws on the Z6 P.C. board. Then remove the Z6 P.C. board.

(8) Z10 MOTHERBOARD P.C. Board removal

Remove the top cover, the bottom cover, the front panel, the rear panel, the two side covers, Z1 P.C. board, Z2 P.C. board, Z3 P.C. board, Z5 P.C. board, Z6 P.C. board, and Z7 P.C. board. Then remove the Z10 P.C. board.

(a) Remove the sixteen screws on the Z10 P.C. board.

(b) Disconnect the J17, J18, J19 and J20 connectors.

(c) Remove the Z10 P.C. board.

(9) Z9 GP-IB INTERFACE P.C. board removal

Remove the top cover and the rear panel as described in 2.2.2-(1) and 2.2.3-(2). Then remove the Z9 P.C. board.

(a) Remove the two screws for GP-IB connector on the rear panel.

(b) Disconnect the J1 connector from J1 on the Z1 P.C. board.

(c) Remove the three screws on the Z9 P.C. board.

(d) Remove the Z9 P.C. board.

(10) Z8 CMI SHAPER P.C. board removal

Remove the bottom cover as described in 2.2.2-(3). Then remove the Z8 P.C. board.

The Z8 P.C. board can be removed without removing the Z5 P.C. board. (Refer to [5] Circuit Diagram of T-Z8 CMI SHAPER.)

(a) Disconnect the Z3-J7 connector (to Z8-J1).

(b) Disconnect the coaxial cable (DFS-020S) to the Z8-terminals #1 and #2 using a soldering iron.

(c) Disconnect the wiring to the Z8-terminals #3 and #4 using a soldering iron.

(d) Disconnect the wiring to the Z8-terminal (-5.2 V) using a soldering iron.

(e) Disconnect the wiring to the Z8-terminal (-12 V) using a soldering iron.

(f) Remove the two screws on the Z8 P.C. board.

(g) Disconnect the P.C. board supporting pins on the Z8 P.C. board side using a soldering iron.

Table 2-2 Transmitter Mechanical Part List
(See Fig. 2-7)

NO.	PARTS NO.	DESCRIPTION	Q'TY
(1)	44E68583	BUTTON	1
(2)	44E79340	BUTTON	8
(3)	44E80830	BUTTON	14
(4)	442E74817	BUTTON	3E
(5)	34N39557	PLATE, NAME	1
(6)	349B73667	STACKING FOOT	4
(7)	44B80553	ANGLE	1
(8)	432B31784	COVER	1

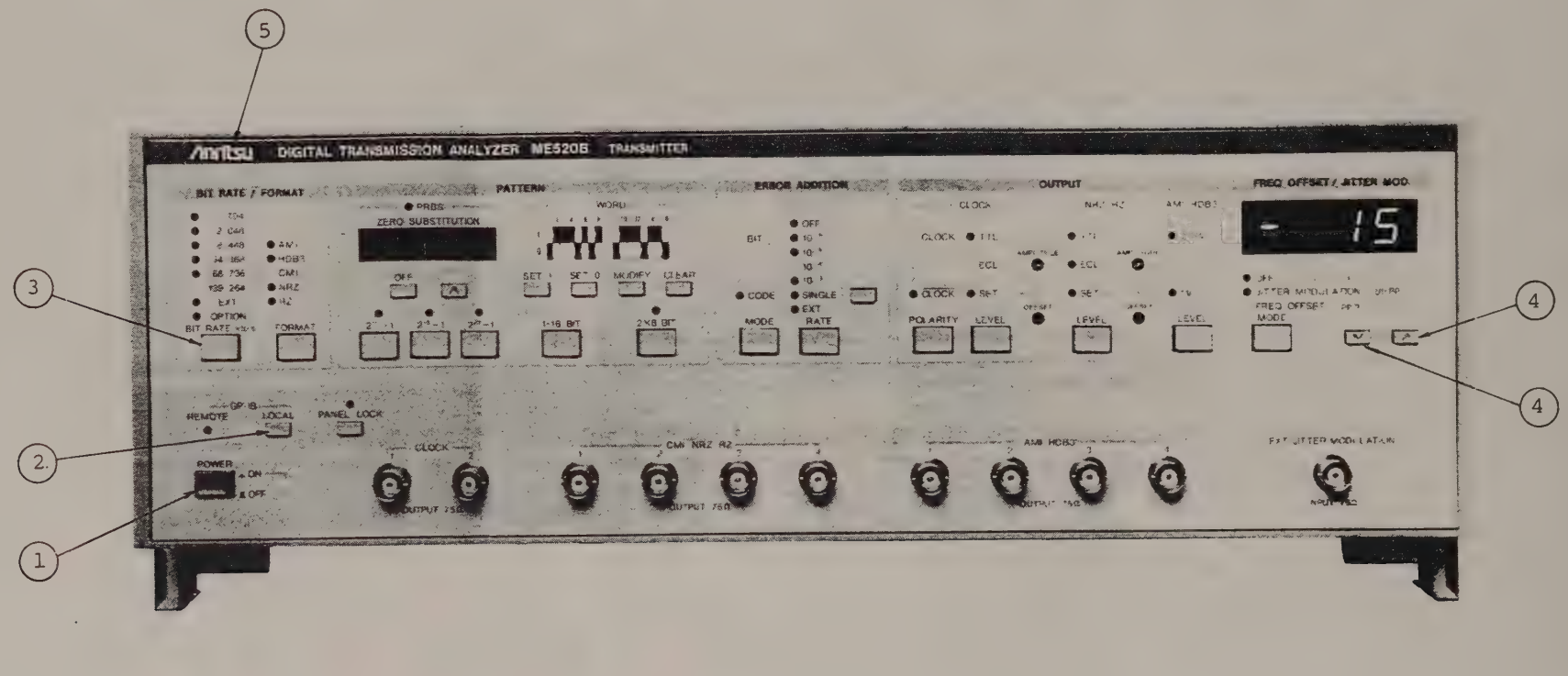
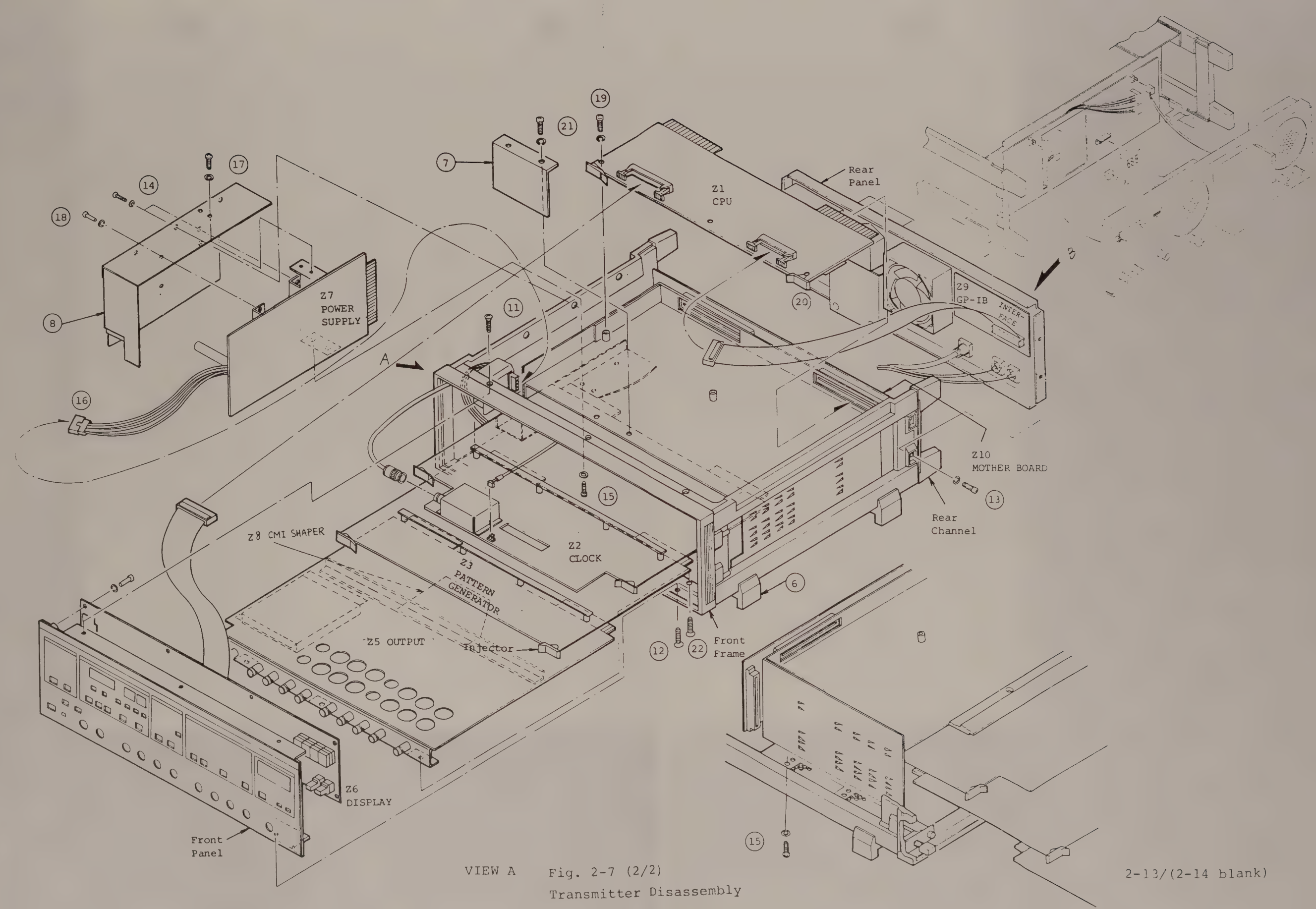


Fig. 2-7 (1/2)
Transmitter Disassembly



VIEW A

Fig. 2-7 (2/2)
Transmitter Disassembly

2.2.4 Receiver disassembly

The ME520B Receiver Unit disassembly is done by Fig. 2-8 to Fig. 2-12 and its mechanical parts list Table 2-3.

At first, remove the top cover, the two side covers, and the bottom cover as described in paragraph 2.2.2-(1), (2), and (3).

(1) Printer Unit Removal (Fig. 2-10)

Remove the top cover as described in paragraph 2.2.2-(1). Then remove the printer section as follows.

(a) When printer is mounted (OPTION-01)

(i) Disconnect the cable ❶ from J2 on the Z12 P.C. board.

(ii) Remove the screw ❷ on the top of the printer.

(iii) Push the PRINTER EJECT button ❸ on the receiver front panel, and remove the printer by gradually sliding it forward.

Note: The method of disassembling the printer unit is shown in Figure 2-11.

(2) P.C. board pressing plate removal (Fig. 2-10)

(a) Remove the four screws ❻ on the plate.

(b) Remove the plate upward.

(3) Front panel removal (Fig. 2-12)

Remove the top cover, the bottom cover, the printer section, and the plate as described in 2.2.2-(1), (3) and 2.2.4-(1), (2). Then remove the front panel section as follows.

(a) Remove the three screws ㉑ on the top of the front panel.

(b) Remove the three screws ㉒ on the bottom of the front panel.

(c) After sliding front panel slightly forward, the front panel and the Z14 P.C. board can be removed from the front frame.

CAUTION

After first removing connectors and cables protruding from the Z14 P.C. board, pull out the front panel.

(4) Rear panel removal (Fig. 2-12)

Remove the top, the side, and the bottom covers as described in 2.2.2-(1), (2), and (3). Then remove the rear panel as follows.

(a) Remove the two screws ㉓ on each side of the rear channel.

(b) Remove the three screws ㉔ on the top of the rear channel.

(c) Remove the two screws ㉕ on the rear panel.

(d) Remove the rear panel by gradually sliding it backward.

CAUTION

After first removing connectors and cables protruding from the rear panel, pull out the rear panel.

(5) Z16 POWER SUPPLY P.C. board removal (Fig. 2-12)

Remove the top, the side, and the bottom covers as described in 2.2.2-(1), (2), and (3). Then remove the case of the Z16 POWER SUPPLY P.C. board as follows.

(a) Remove the three screws ㉖ on the side frame.

(b) Remove the two screws ㉗ on the bottom frame.

(c) Disconnect the J2 connector ㉘ of the Z16 P.C. board from J2 on the main frame.

(d) Raise the injectors ㉙ on both sides of the Z16 P.C. board up and remove the Z16 P.C. board from the Z17 mother board. Then, slowly lift the Z16 P.C. board with the case. After pulling the case out from the main frame, remove the case from the Z16 P.C. board according to the following steps.

(e) Remove the two screws ㉚ on the top of the case.

(f) Remove the four screws ㉛ on the side of the case.

(6) Z4 to Z12 P.C. board removal (Fig. 2-12)

Remove the top cover and the plate as described in 2.2.2-(1) and 2.2.4-(2). Raise the injectors on both sides of the P.C. boards up and pull them upward.

CAUTION

First remove connectors and cables protruding from each P.C. board.

(7) Z14 DISPLAY P.C. board removal (Fig. 2-12)

Remove the front panel as described in 2.2.4-(3). Then remove the Z14 P.C. board as follows.

(a) Disconnect the J5, J7, J9, J11, and J13 connectors.

(b) Disconnect the J1 and J2 connectors from J45 and J46 on the Z17 mother board.

(c) Loosen the screws ⑲ of the knob on the front panel and remove the knob.

(d) Remove the eleven screws on the Z14 P.C. board (See Fig. 2-8). Then remove the Z14 P.C. board.

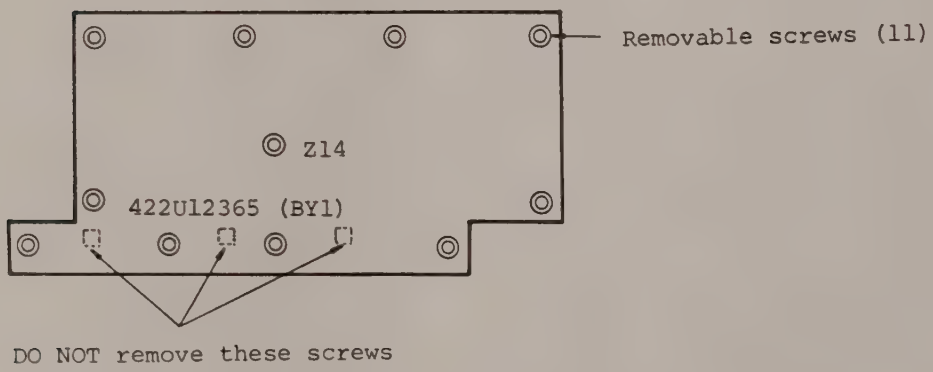


Fig. 2-8 Z14 P.C. Board Screw Removal

(8) Z17 MOTHERBOARD P.C. board removal (Fig. 2-12)

Remove the bottom cover, the rear panel and Z4 to Z12 P.C. boards as described in 2.2.2-(3), 2.2.4-(4), and 2.2.4-(6). Then remove the Z17 P.C. board.

(a) Disconnect the J16, J17, J18, J19, J20, J45, J46 connectors (See Fig. 2-9).

(b) Disconnect the J47 connector from J2 on the Z10 P.C. board.

(c) Remove the twenty-four screws according to Fig. 2-9, then remove the Z17 P.C. board.

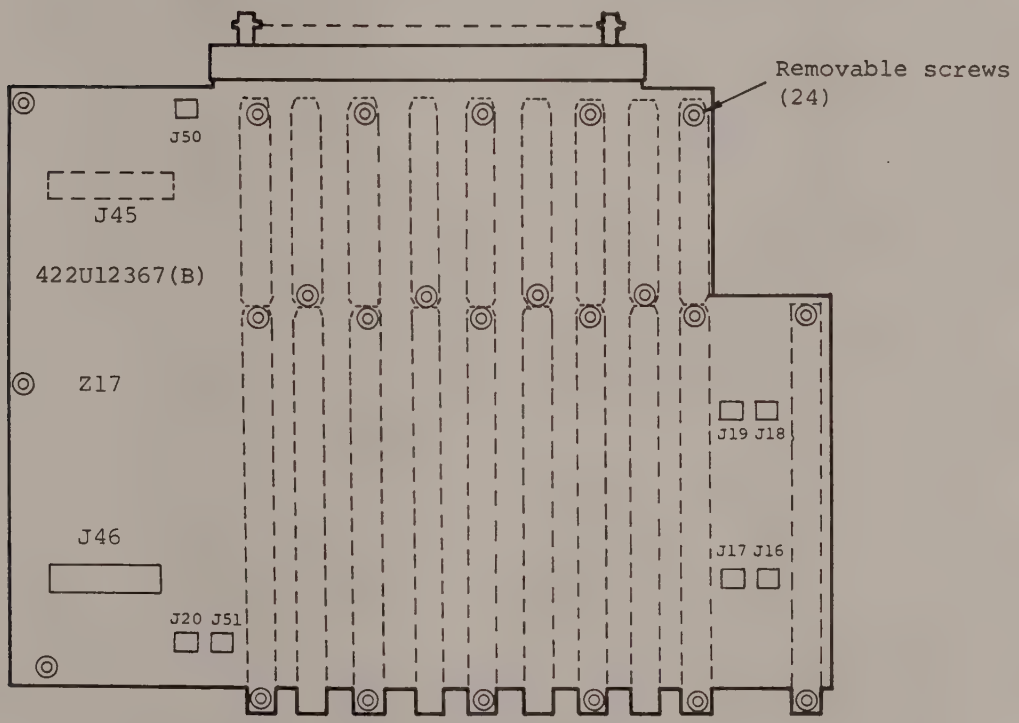


Fig. 2-9 Z17 P.C. Board Screw Removal

(9) Z15 GP-IB INTERFACE P.C. board removal (Fig. 2-12)

Remove the rear panel as described 2.2.4-(4). Then remove the Z15 P.C. board as follows.

(a) Remove the two screws for the GP-IB connector on the rear panel.

(b) Disconnect the J1 connector from J1 on the Z12 P.C. board.

(c) Remove the three screws on the Z15 P.C. board.

(d) Remove the Z15 P.C. board.

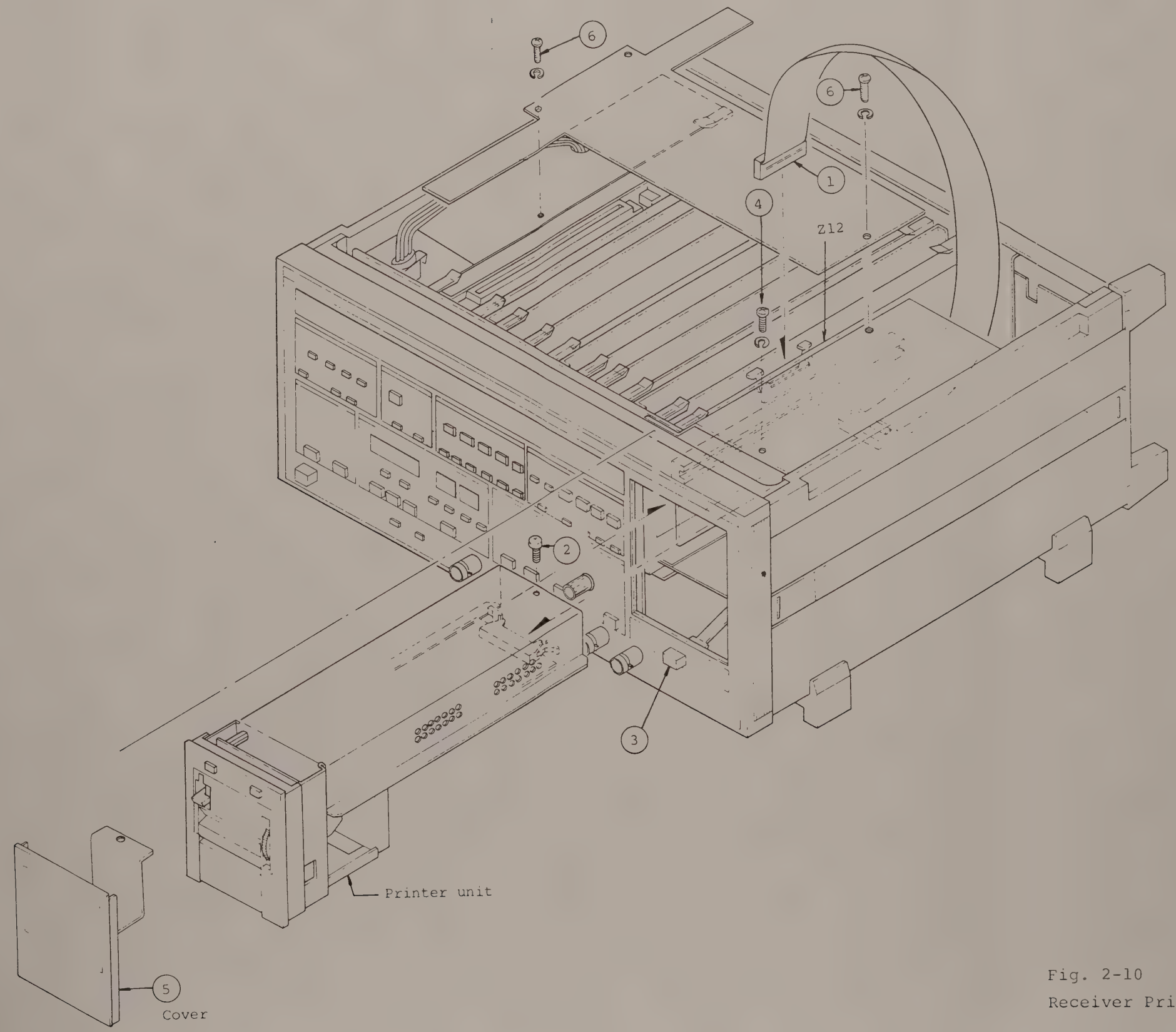


Fig. 2-10
Receiver Printer Unit Removal

Printer Unit Disassembly

Step	Procedure
1.	Remove the paper case (1) from the body (2) (five screws).
2.	Remove P.C. board (3) from the body (2) (five screws).
3.	Remove connector (5) of the printer section (4) connected with the P.C. board (3).
4.	Remove the COVER (7) from the body (2) (two screws)
5.	Remove the printer case (6) from the body (2) (six screws).
6.	Remove the printer section (4) from the body (2) (Three screws).

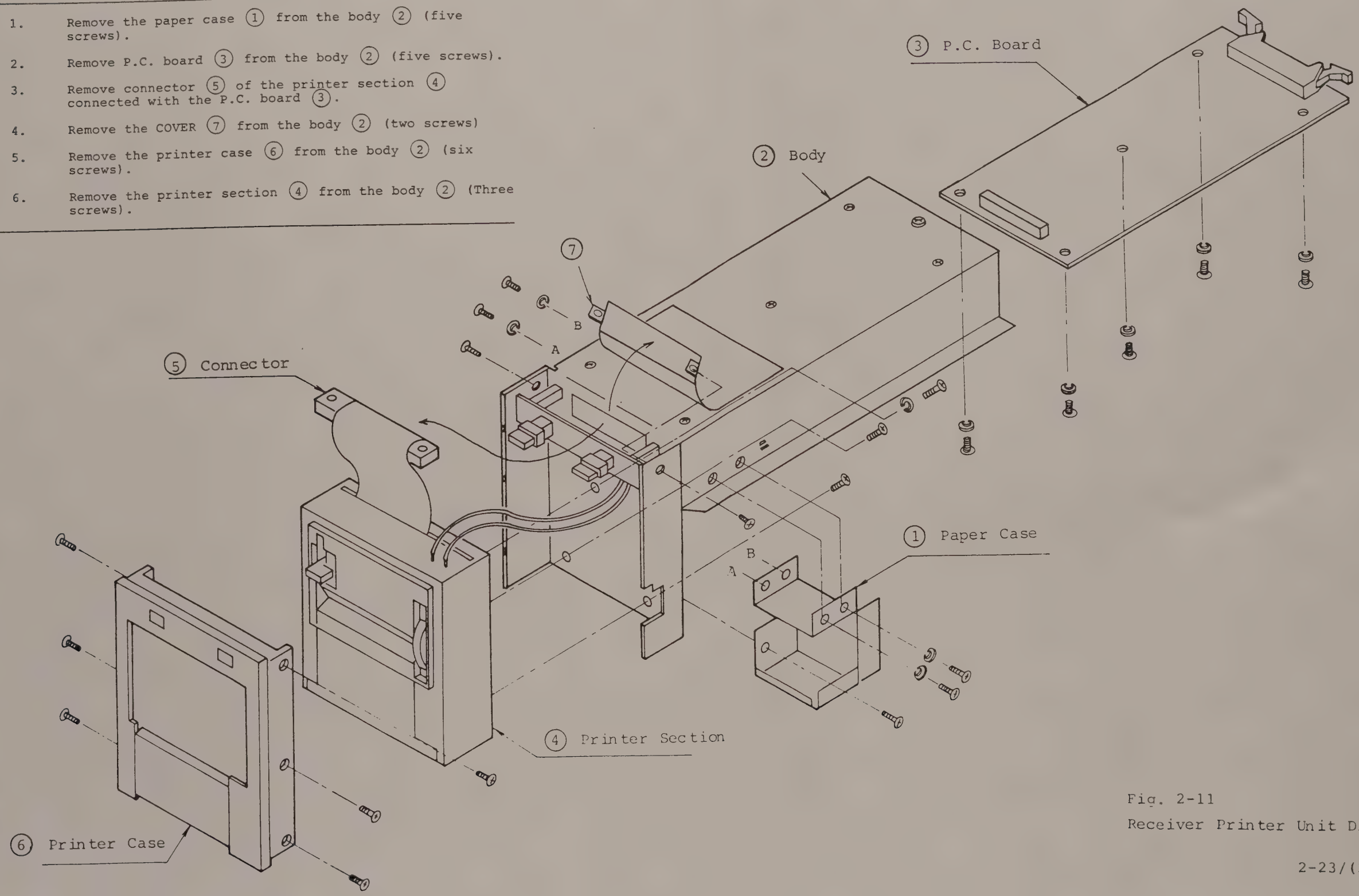


Fig. 2-11
Receiver Printer Unit Disassembly

Table 2-3 Receiver Mechanical Parts List
(See Fig. 2-12.)

NO.	PARTS NO.	DESCRIPTION	Q'TY
①	44E68583	BUTTON	2
②	442E74817	BUTTON	7E
③	442E80831	BUTTON	1B
④	442E80831	BUTTON	1D
⑤	442E74817	BUTTON	1F
⑥	44E79340	BUTTON	22
⑦	44E80830	BUTTON	18
⑧	342E73701	KNOB	1
⑨	34E76656	BUTTON	2
⑩	34N39557	PLATE, NAME	1
⑪	349B73667	STACKING FOOT	4
⑫	43B31796	PLATE	1
⑬	342B31795	COVER	1
⑭	44B82093	PLATE	1
⑮	43B30278	FILTER	1
⑯	44H76989	FILTER	1
⑰	34B78330	PANEL CLAMP	3
⑱	34B78330	PANEL CLAMP	3B
⑲		SCREW	1

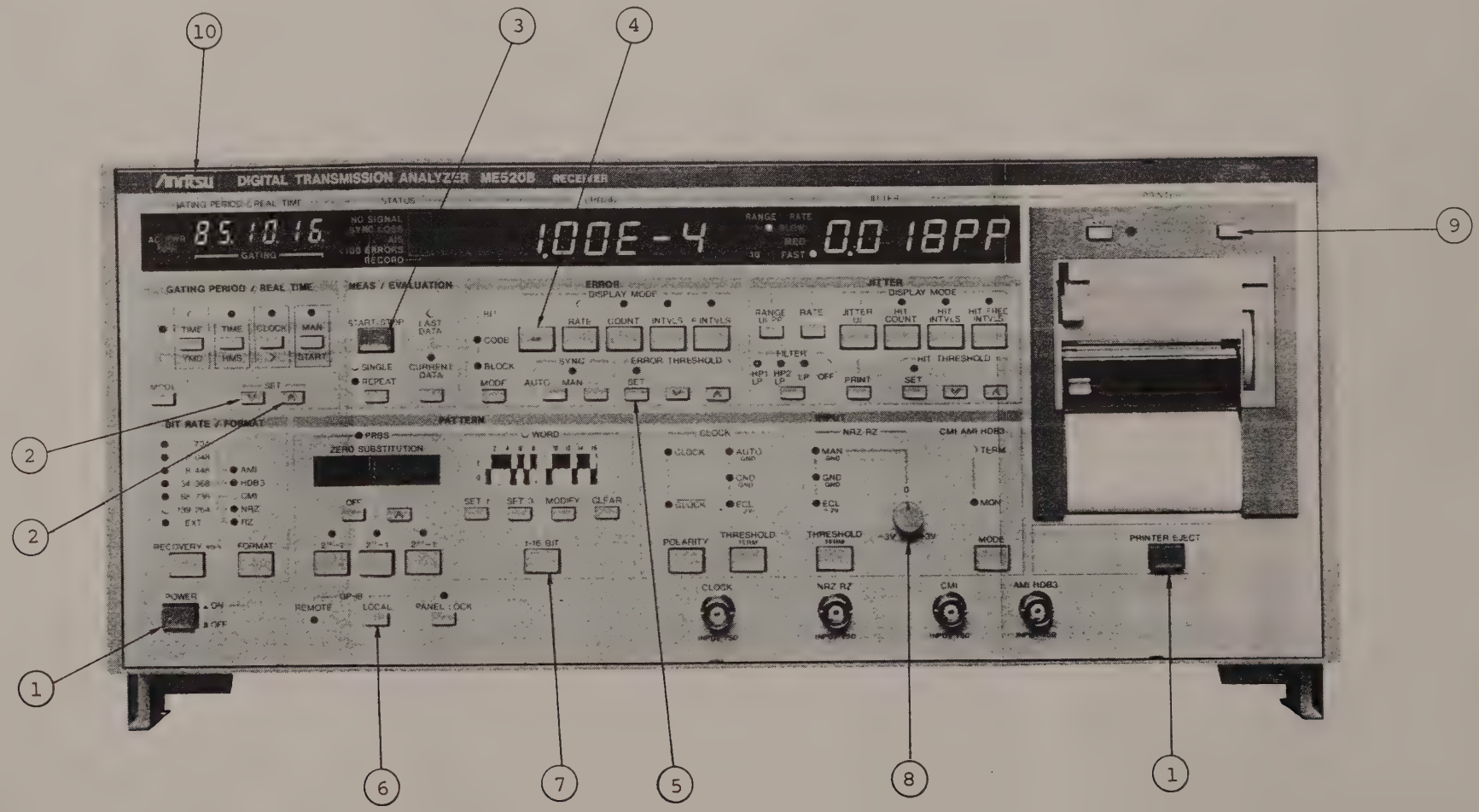


Fig. 2-12 (1/2)
Receiver Disassembly

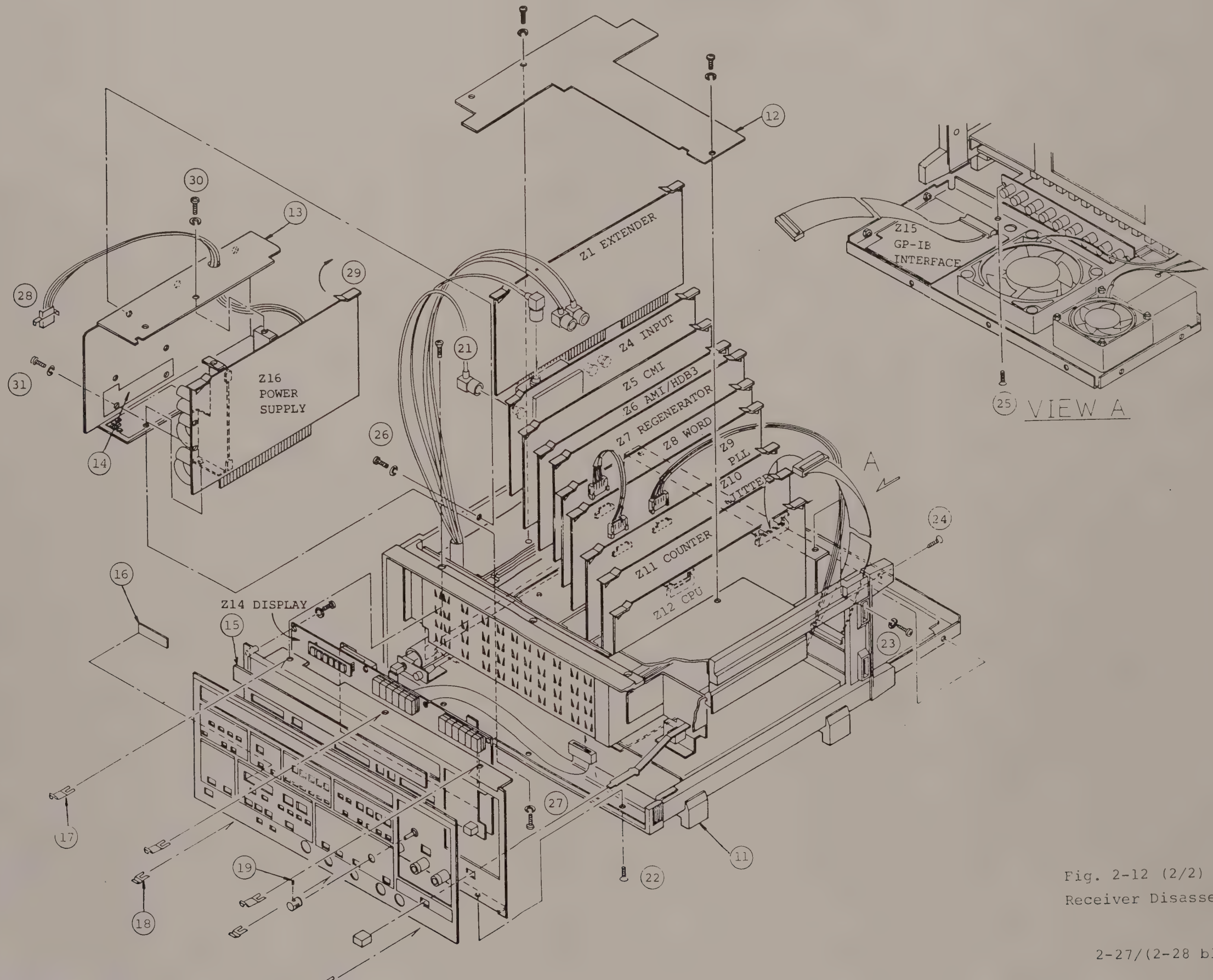


Fig. 2-12 (2/2)
Receiver Disassembly

2.3 Exposed Views

The following Figs. 2-13 to 2-16 show the top.bottom exposed views of the transmitter and the receiver.

Locations of some parts (P.C. board with Z numbering, J: connector, T: transformer, and G: fan) are indicated by arrow.

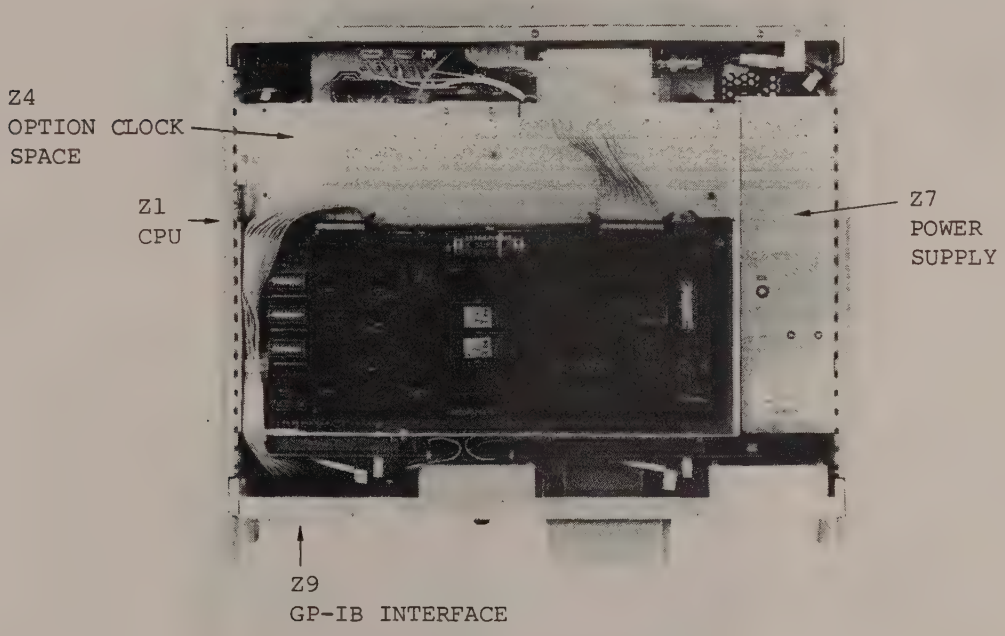


Fig. 2-13 Top View of Transmitter

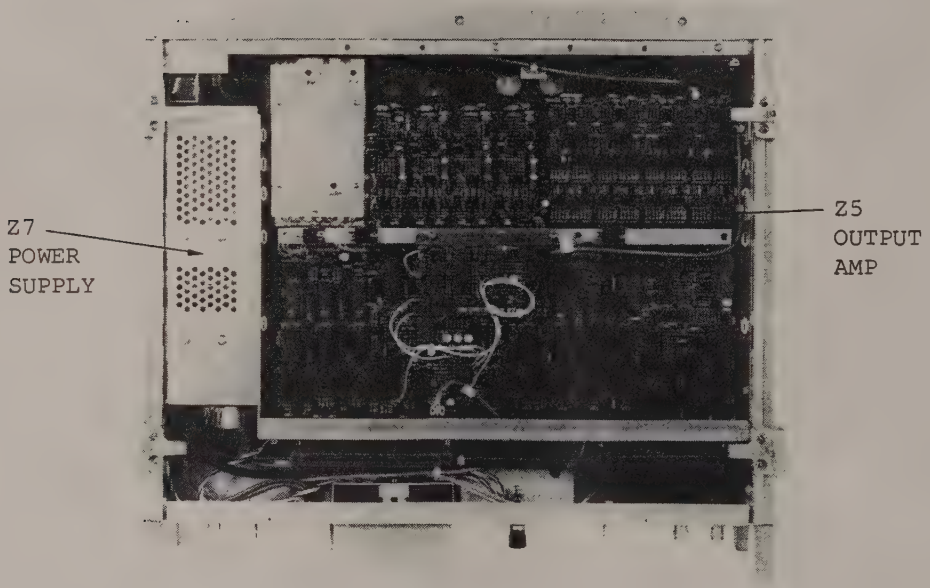


Fig. 2-14 Bottom View of Transmitter

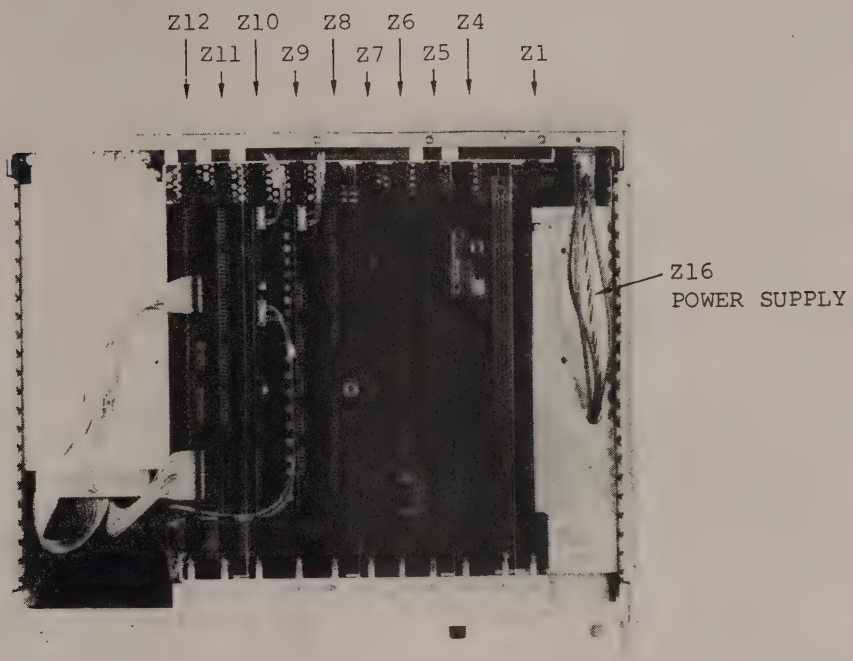


Fig. 2-15 Top View of Receiver

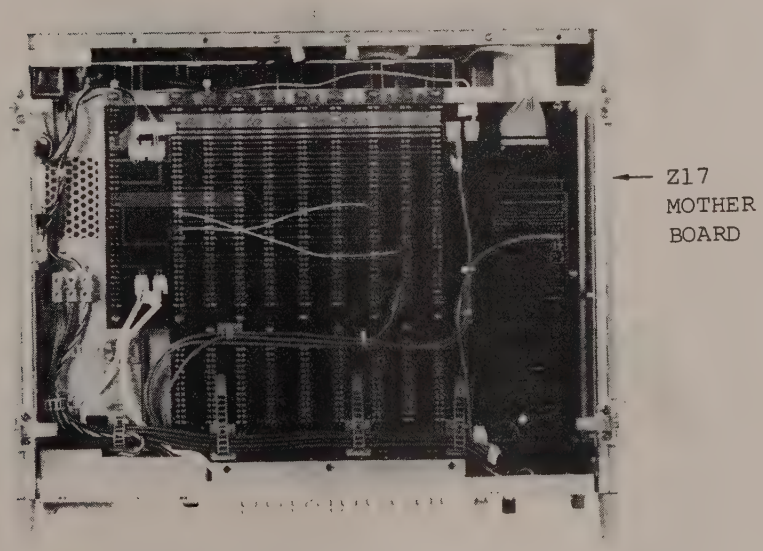


Fig. 2-16 Bottom View of Receiver

SECTION 3

TROUBLESHOOTING AND ADJUSTMENTS

3.1 Introduction

Section 3 describes how to troubleshooting and adjust the instrument when trouble occurs during measurement or when abnormalities are detected during performance checks of the Operation.

This section also explains checking and replacement of parts, principles of operation providing details on circuits, and the tools necessary to make repairs and adjustments.

Troubleshooting can be diagrammed as follows.

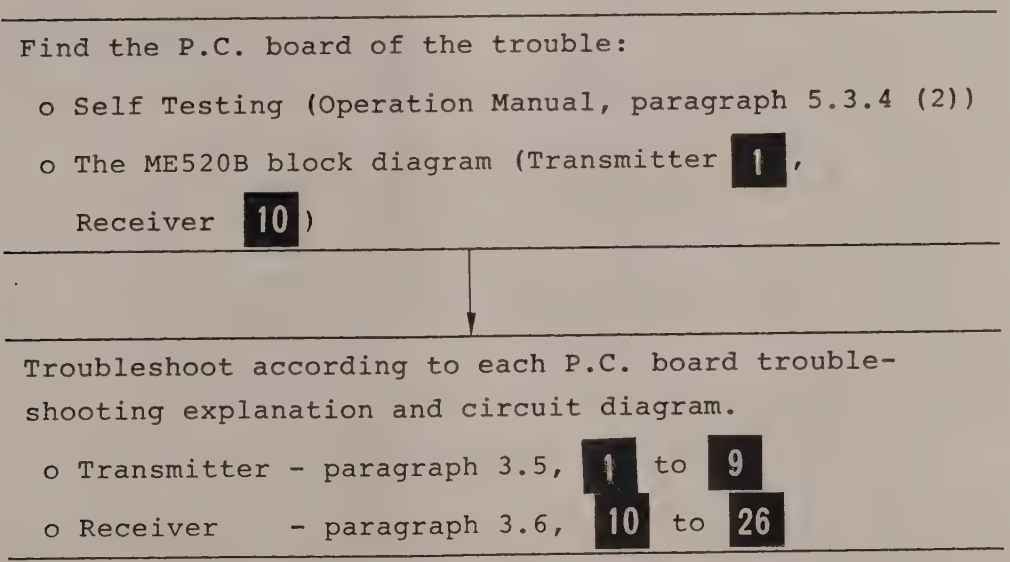


Fig. 3-1 Troubleshooting Procedure

3.2 Checking and Replacing Parts

3.2.1 Explanation of identification markings on the P.C. board

As shown in Fig. 3-2, the ME520B P.C. board has a unified Assembly number, Drawing number, and Revision number.

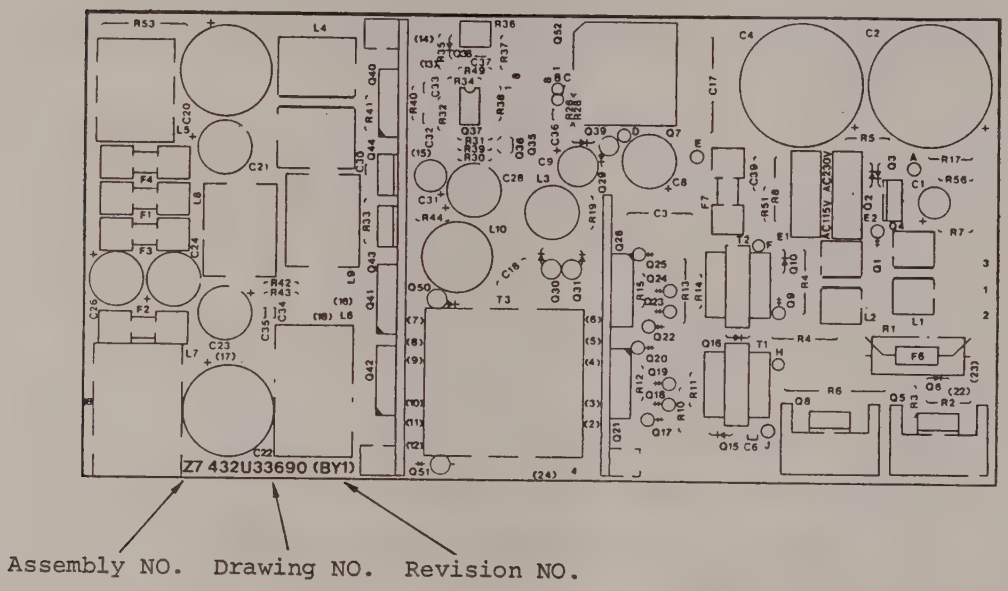


Fig. 3-2 P.C. Board Marking Explanation

3.2.2 Notes on Soldering

(1) Use an ordinary 30 to 40 watt pencil type soldering iron.

(2) Before using the soldering iron, be sure it is insulated. If not, it may damage the part.

(3) When removing a soldered part from a circuit board or soldering in a new part, nip the part lead with tweezers to shunt heat.

(4) The tips of major part leads are bent behind the PC board to ensure tight support. To remove a part, first lift up the tips of the leads and then remove the part.

3.2.3 Transistor check

(1) Check of transistors mounted on the PC board

Transistors can be checked for acceptable quality in the operating state by measuring the base and emitter potentials. The NPN type silicon transistor shows a value in which the base potential is 0.6 or 0.7 V higher than the emitter potential. In the PNP silicon transistor, the former is 0.6 or 0.7 V lower than the latter. Transistors are therefore faulty if these relationships are not satisfied.

(2) Check of transistors removed from the P.C. board

Transistors can be checked by measuring the resistance values among the emitter, base, and collector using a circuit tester. Standard values are given in Table 3-1. Note that this check should be performed at a measuring current of less then 100 μA.

Table 3-1 Test of Transistors Demounted from the Circuit

Type of Transistors	Connect Ohmmer		Resistance to be Measured (ohm)
	Positive lead to	Negative lead to	
PNP silicon	Emitter, Collector	Base	1 to 10 k
	Emitter	Collector	Very high
NPN silicon	Base	Emitter, Collector	1 to 10 k
	Emitter	Collector	Very high

3.3 Recommended Test Equipment

The test equipment listed in Table 3-2 is recommended during adjustments and troubleshooting. Different test equipment may be used if it meets the required characteristics listed in the table.

Table 3-2 Recommended Test Equipments

No.	Name (Recommended Type)	Major Specification Required
1	Oscilloscope 1	Bandwidth : 500 MHz
2	Oscilloscope 2	Bandwidth : 200 MHz
3	DC Voltmeter	Range : to 30 V Resolution : 0.01 V
4	Signal Generator (MG442A)	Frequency : 10 Hz to 10 MHz
5	Frequency Counter (MF57A)	Frequency : 10 Hz to 500 MHz
6	75Ω/50Ω Matching Pad MP548A (See paragraph 3.3.1)	Frequency : DC to 170 MHz
7	ECL Level Converter MP549A (See paragraph 3.3.1)	Frequency : DC to 170 MHz
8	Attenuator (MN510D)	Frequency : DC to 200 MHz

3.3.1 Equivalent circuit for adapter

(1) 75/50Ω Matching Pad MP548A

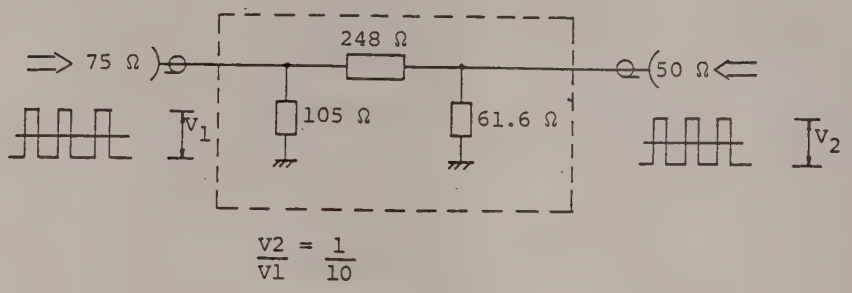


Fig. 3-3 75/50Ω Matching Pad MP548A

(2) ECL Level Converter MP549A

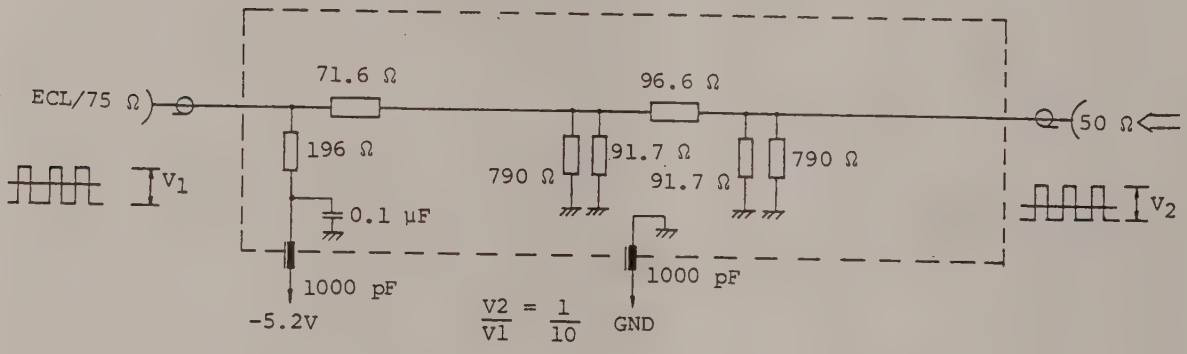


Fig. 3-4 ECL Level Converter MP549A

3.4 Circuit Reference

The P.C. board of the ME520B (T: Transmitter), ME520B (R: Receiver) are given Z numbers such as T-Z3/R-Z10. Table 3-3, Table 3-4 give the list of the Z numbers, circuit diagram names, P.C. board drawing numbers, and parts list numbers. SCHEMATIC No.s are the numbers of the circuit diagram shown in this section.

Parts lists are shown on the section 4.

Table 3-3 ME520B Transmitter Circuit Reference

SCHEMATIC No.	Circuit Diagram Name	Z No.	P.C. Board Drawing No.	Parts List No.
1	ME520B TRANSMISSION ANALYZER TRANSMITTER			44W84790
2	CPU	T-Z1	422U10759	44W84791
3	CLOCK	T-Z2	422U13073	44W84792
4	PATTERN GENERATOR	T-Z3	422U10763	44W84793
5	OUTPUT AMP CMI SHAPER	T-Z5 T-Z8	422U10767 442U83529	44W84794 44W84797
6	DISPLAY	T-Z6	422U10769	44W84795
7	POWER SUPPLY	T-Z7	432U33690 442U83497	44W84796
8	GP-IB INTERFACE	T-Z9	432U30268	44W84798
9	MOTHERBOARD	T-Z10	422U10771	44W84799

Table 3-4 ME520B Receiver Circuit Reference

SCHEMATIC No.		Circuit Diagram Name	Z No.	P.C. Board Drawing No.	Parts List No.
10		ME520B TRANSMISSION ANALYZER RECEIVER			44W84800
11		INPUT	R-Z4	422U12355	44W84801
12		CMI	R-Z5	422U12359	44W84802
13		AMI/HDB3	R-Z6	422U12357	44W84803
14		REGENERATOR	R-Z7	422U10785	44W84804
15		WORD	R-Z8	422U10787	44W84805
16		PLL	R-Z9	422U10789	44W84806
17		JITTER	R-Z10	422U10791	44W84807
18		COUNTER	R-Z11	422U12361	44W84808
19		CPU	R-Z12	422U12363	44W84809
20		DISPLAY	R-Z14	422U12365	44W84810
21		GP-IB INTERFACE	R-Z15	432U33396	44W84811
22		POWER SUPPLY	R-Z16	422U12568, 442U83499	44W84812
23		MOTHERBOARD	R-Z17	422U12367	44W84813
24	OPTION 01	PRINTER UNIT		———	44W77082
25	OPTION 01	PRINTER INTERFACE		432U33554	44W77606
26	OPTION 01	PRINTER CONTROL EXTENDED BOARD		442U77432	44W77607

3.5 Transmitter Troubleshooting and Adjustment

An explanation of the ME520B transmitter circuit is given using the simplified block diagram of the transmitter shown in Fig. 3-5.

The Z2 CLOCK circuit generates clock signals. The Z3 PATTERN GENERATOR circuit uses these clock signals to generate PRBS or the arbitrarily set words. The Z5 OUTPUT circuit encodes, amplifies and outputs the NRZ format patterns generated in Z3.

The Z1 CPU circuit controls these circuits to the state preset at the front panel and displays the state on the Z6 DISPLAY. It also exchanges data externally through the Z9 GP-IB circuit and controls the GP-IB.

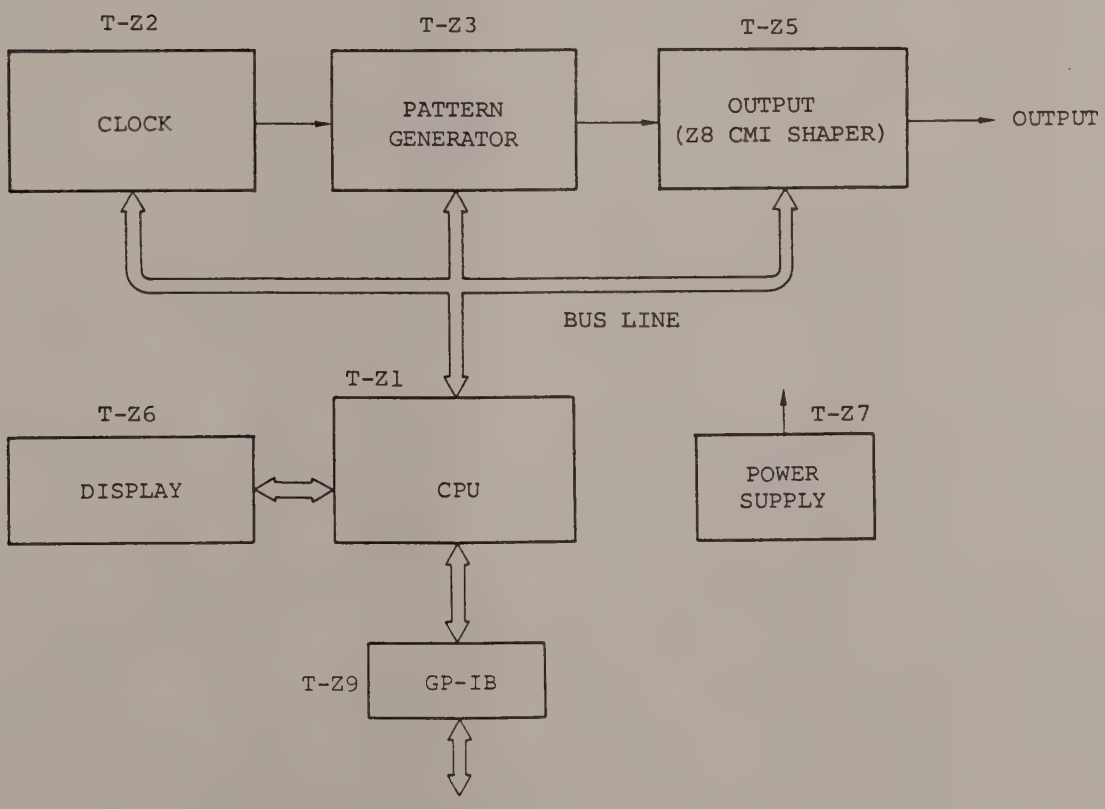


Fig. 3-5 Simplified Block Diagram of ME520B Transmitter

A simplified explanation of the main board functions of the transmitter is given below. For details, see paragraphs 3.5.1 to 3.5.5.

(1) T-Z2 CLOCK Circuit

This circuit is an internal clock (six waves) circuit and an external clock circuit.

It has the function of adding jitter to the internal and external clocks. In addition, it has a frequency offset function for the internal clock.

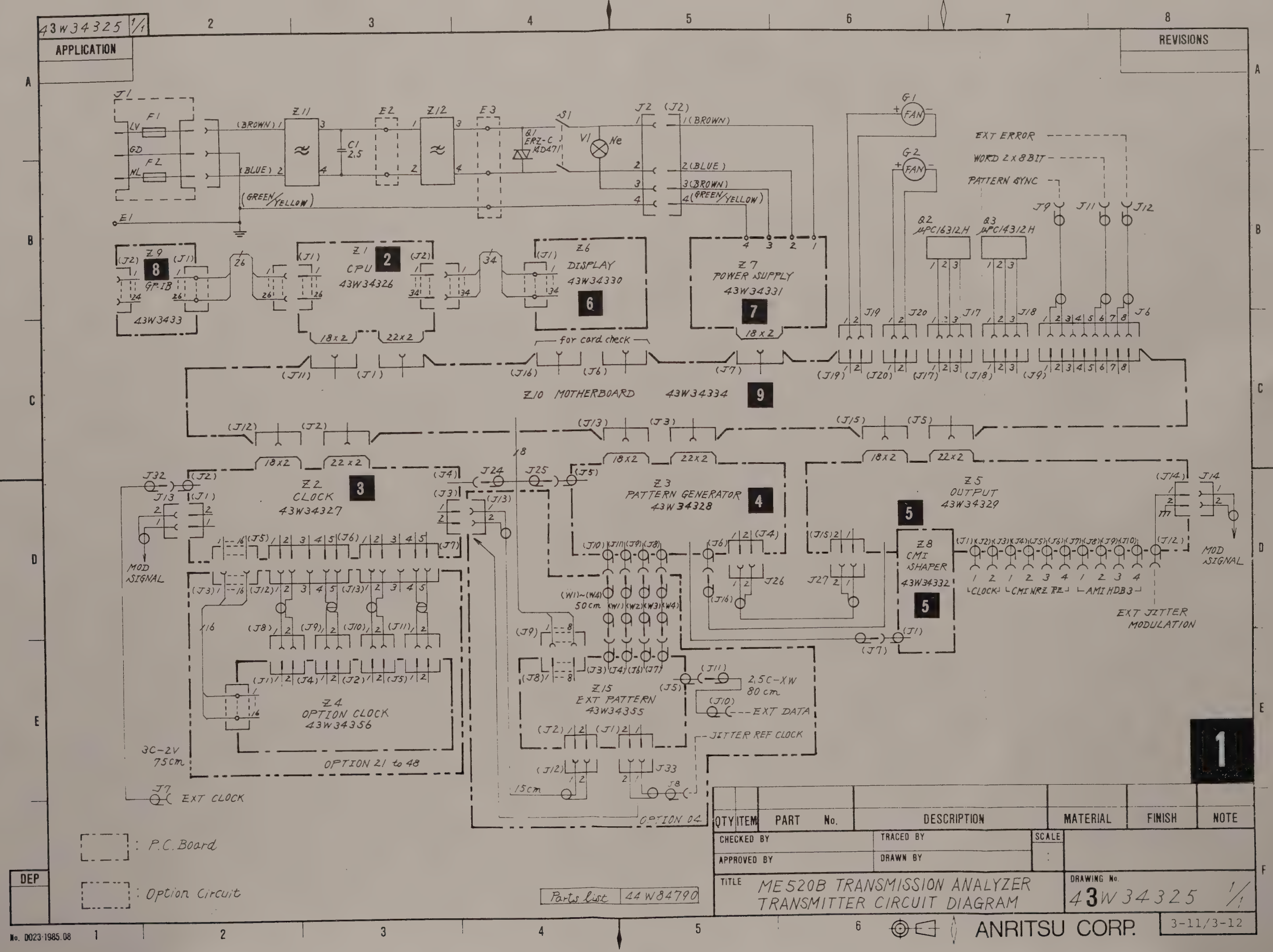
(2) T-Z3 PATTERN GENERATOR Circuit

This circuit is a Pseudo Random Bit Sequence (PRBS) pattern and WORD pattern generator circuit.

It has a zero substitution function in the PRBS pattern, a pattern sync signal generation function, a trigger signal generation function for error addition, and a bit error generation function.

(3) T-Z5 OUTPUT Circuit

This circuit has an AMI/HDB3 coder, CMI coder, and code error generation function. It reshapes waveforms of clock and data signals and outputs two clocks, four CMI/NRZ/RZ data, and four AMI/HDB3 data.


43W34325 1/1
APPLICATION
REVISIONS
Z1 CPU 43W34326
Z6 DISPLAY 43W34330
Z7 POWER SUPPLY 43W34331
Z9 GP-IB 43W3433
Z10 MOTHERBOARD 43W34334
Z2 CLOCK 43W34327
Z3 PATTERN GENERATOR 43W34328
Z5 OUTPUT 43W34329
Z8 CMI SHAPER 43W34332
Z4 OPTION CLOCK 43W34356
Z15 EXT PATTERN 43W34355
OPTION 21 to 48
OPTION 04
EXT ERROR
WORD 2x8BIT
PATTERN SYNC
EXT JITTER MODULATION
MOD SIGNAL
EXT CLOCK
JITTER REF CLOCK
EXT DATA
for card check
: P.C. Board
: Option Circuit
Parts list 44W84790
QTY ITEM PART No. DESCRIPTION MATERIAL FINISH NOTE
CHECKED BY
TRACED BY
SCALE
APPROVED BY
DRAWN BY
TITLE ME520B TRANSMISSION ANALYZER TRANSMITTER CIRCUIT DIAGRAM
DRAWING No. 43W34325 1/1
ANRITSU CORP.
3-11/3-12
No. D023-1985.08

3.5.1 T-Z7 POWER SUPPLY 7 PC Board ⚠

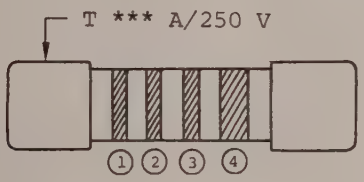
(1) Changing ac line voltage rating

The ME520B transmitter operates at the ac line voltage listed in Table 3-5.
(See Note at the beginning of this manual.)

Table 3-5 Transmitter Ac Fuse Rating

ac line voltage	Transmitter ac line fuse
90 to 138 V	3.15 A (see Note)
180 to 250 V	2 A (see Note)

Note: Color code of fuse



*** A	1	2	3	4
3.15 A	orange	brown	red	blue
2 A	red	black	red	blue

(a) Remove the top cover according to paragraph 2.2.2-(1).

(b) Change ac line voltage rating by changing the switch on the top of the power supply.

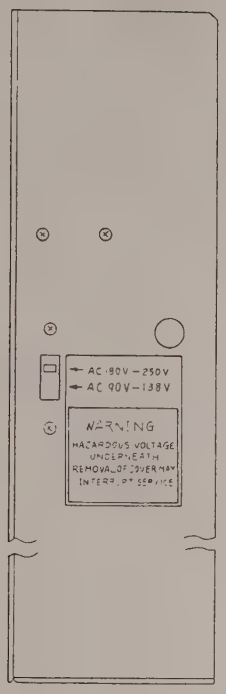


Fig. 3-6 Changing the ac Line Voltage Rating

(c) When changing ac line voltage, replace the two ac line fuses on the rear panel according to Table 3-5. (See Note at the beginning of this manual.)

(2) Replacing secondary side fuse (dc fuse)

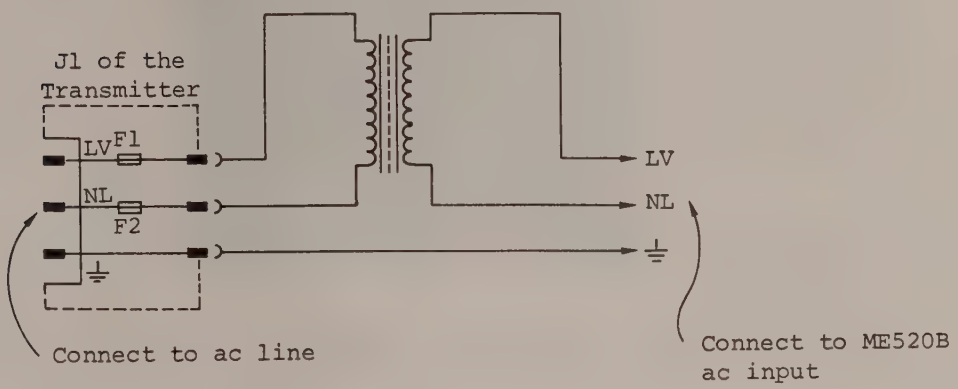
Removal of the left side cover allows replacement of the secondary fuse.

(a) Remove the left side cover as described in paragraph 2.2.2-(2) (see Fig. 2-4).

(b) Remove fuses F1 to F4 from the fuse holder on the T-Z7 P.C. board and replace them with new ones (see Fig. 3-6).

(3) Troubleshooting

Remove the case of the T-Z7 PC board according to paragraph 2.2.3-(3) and insert only the board in the T-Z10 motherboard; then, check the following.



F1, 2 Fuse T ***A/250 V (time-lag fuse)

2 A 230 V 1:1 50/60 Hz Isolation Transformer
or 3.15 A 115 V 1:1 50/60 Hz Isolation Transformer

Fig. 3-7 Connection of Isolation Transformer

CAUTION

T-Z7 power transformer's primary side is directly connected to the ac line usually. To avoid a danger, be sure to connect the isolation transformer between the ac line and the ME520B ac input as shown in Fig. 3-7 when checking steps (a), (b), (c) and (e) of paragraph 3.5.1-(1).

CAUTION

When changing the ac line voltage rating or replacing the secondary side fuse, turn off the POWER switch on the front panel and disconnect the power supply cord from the ac outlet.

(a) Check the TP ❶ signal waveform by connecting the oscilloscope probe ground terminal to the ▽ portion of T-Z7.

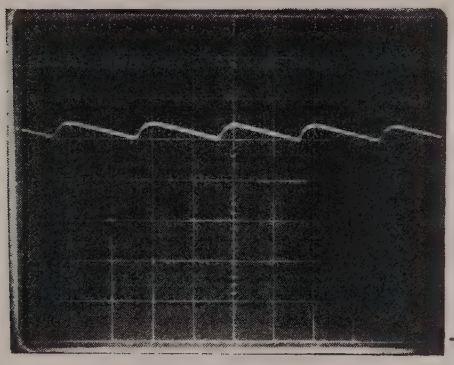


Fig. 3-8 TP ❶ ▽ Waveform of T-Z7

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b) Check the signal waveform between pin numbers 2 and 3 of the T3 using the oscilloscope (TP ❷).

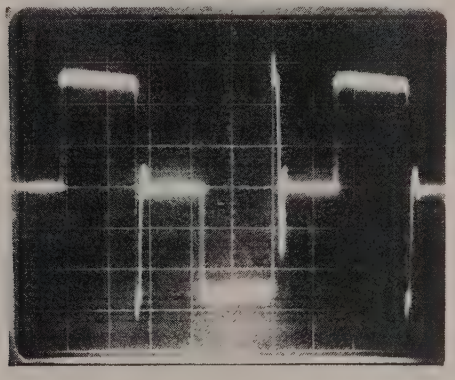


Fig. 3-9 TP ❷ Waveform of T-Z7

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(c) Check the TP ❸ and ❹ waveform by connecting the oscilloscope probe ground terminal to the ▽ portion.

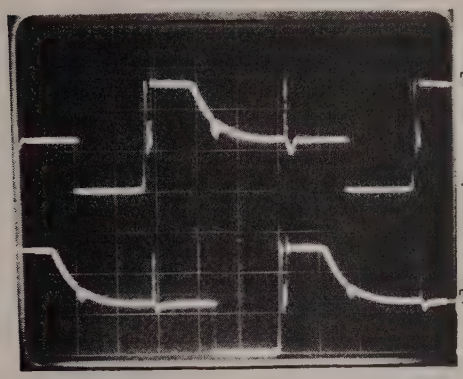


Fig. 3-10 TP ❸ , ❹ Waveform of T-Z7

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(d) Check the signal waveform between pin numbers 13 and 15 of the T3 using the oscilloscope (TP ❺).

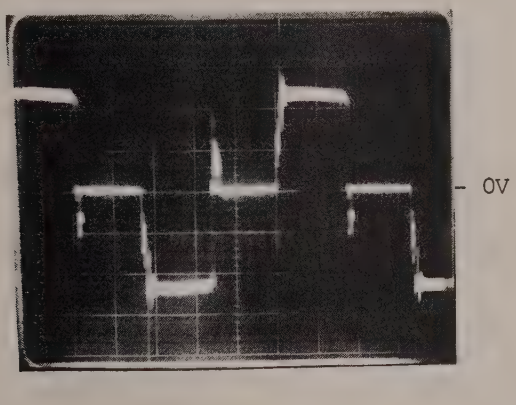


Fig. 3-11 TP ❺ Waveform of T-Z7

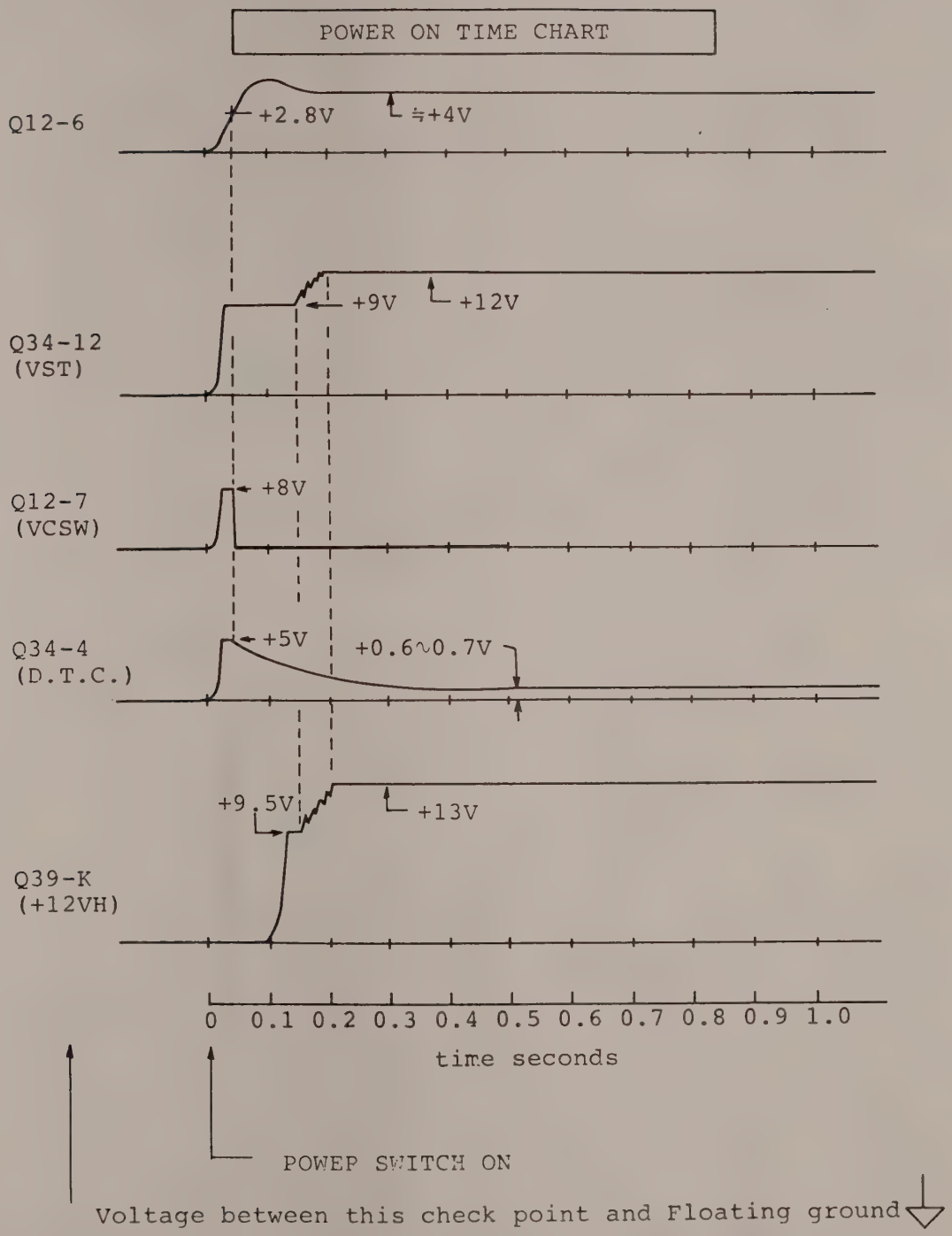
If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(e) Check that the TP ❼ voltage is approx. +2.5 V by connecting the voltmeter probe ground terminal to the ⏚ portion.

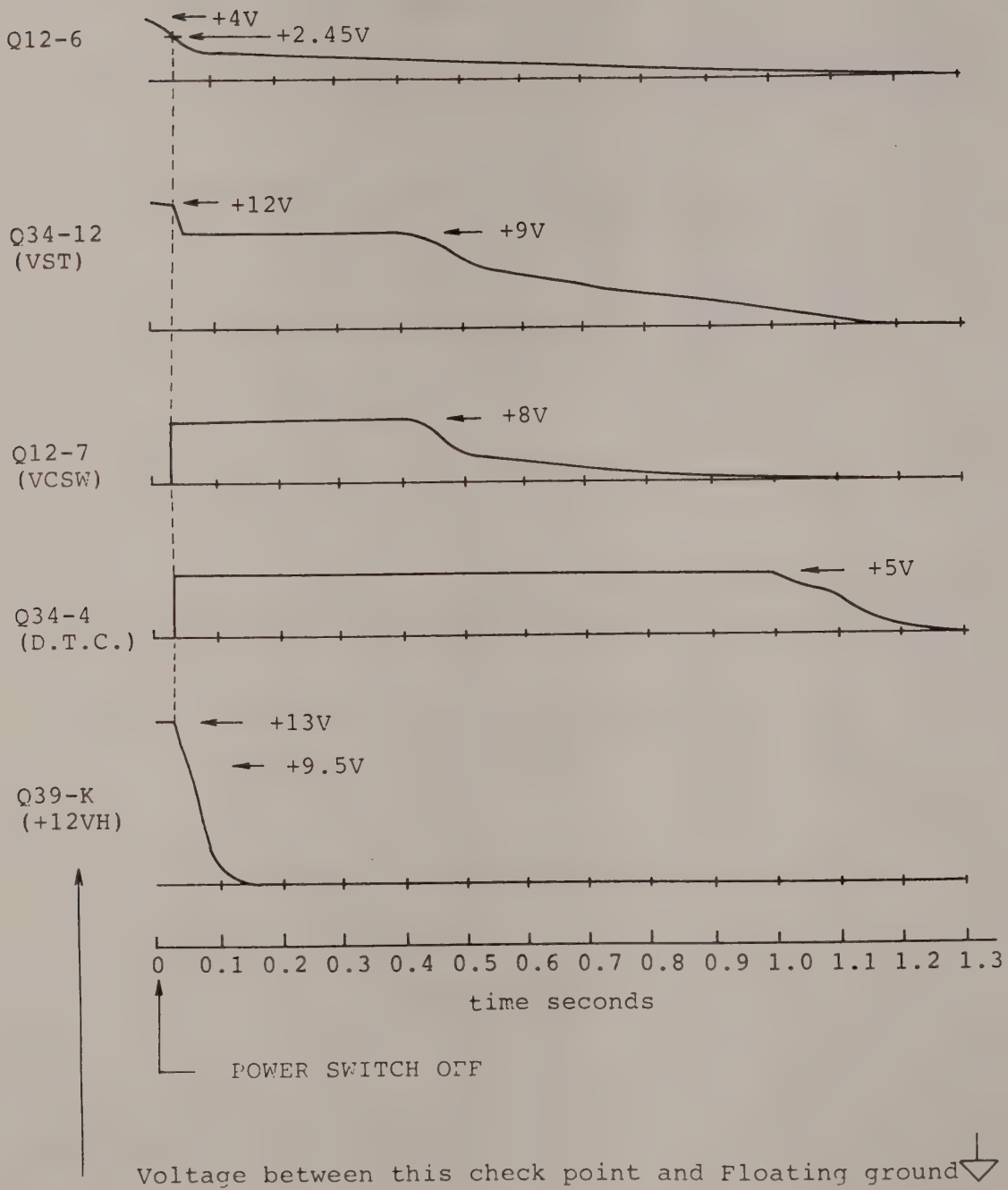
If the above value is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

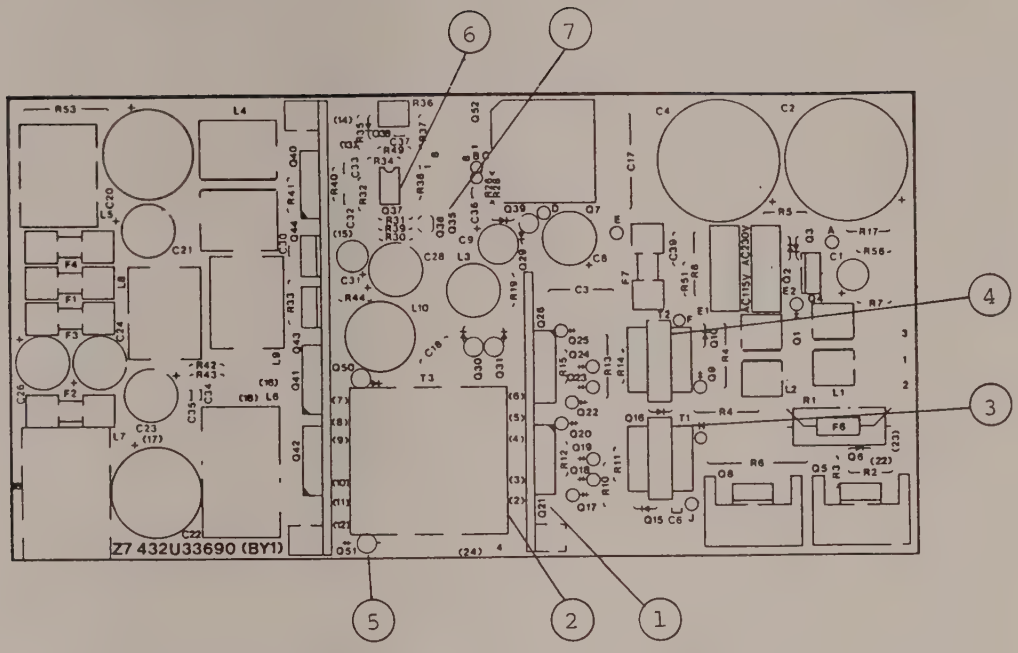
(f) Check that the TP ❻ voltage is approx. +4.9 V by connecting the voltmeter probe ground terminal to the ⏚ portion.

If the above value is OK, Z7 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.


POWER ON TIME CHART
Q12-6
+2.8V
≒+4V
Q34-12
(VST)
+9V
+12V
Q12-7
(VCSW)
+8V
Q34-4
(D.T.C.)
+5V
+0.6∿0.7V
+9.5V
+13V
Q39-K
(+12VH)
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
time seconds
POWER SWITCH ON
Voltage between this check point and Floating ground

POWER OFF TIME CHART





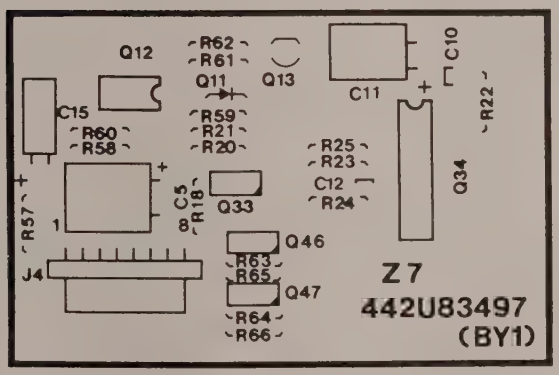
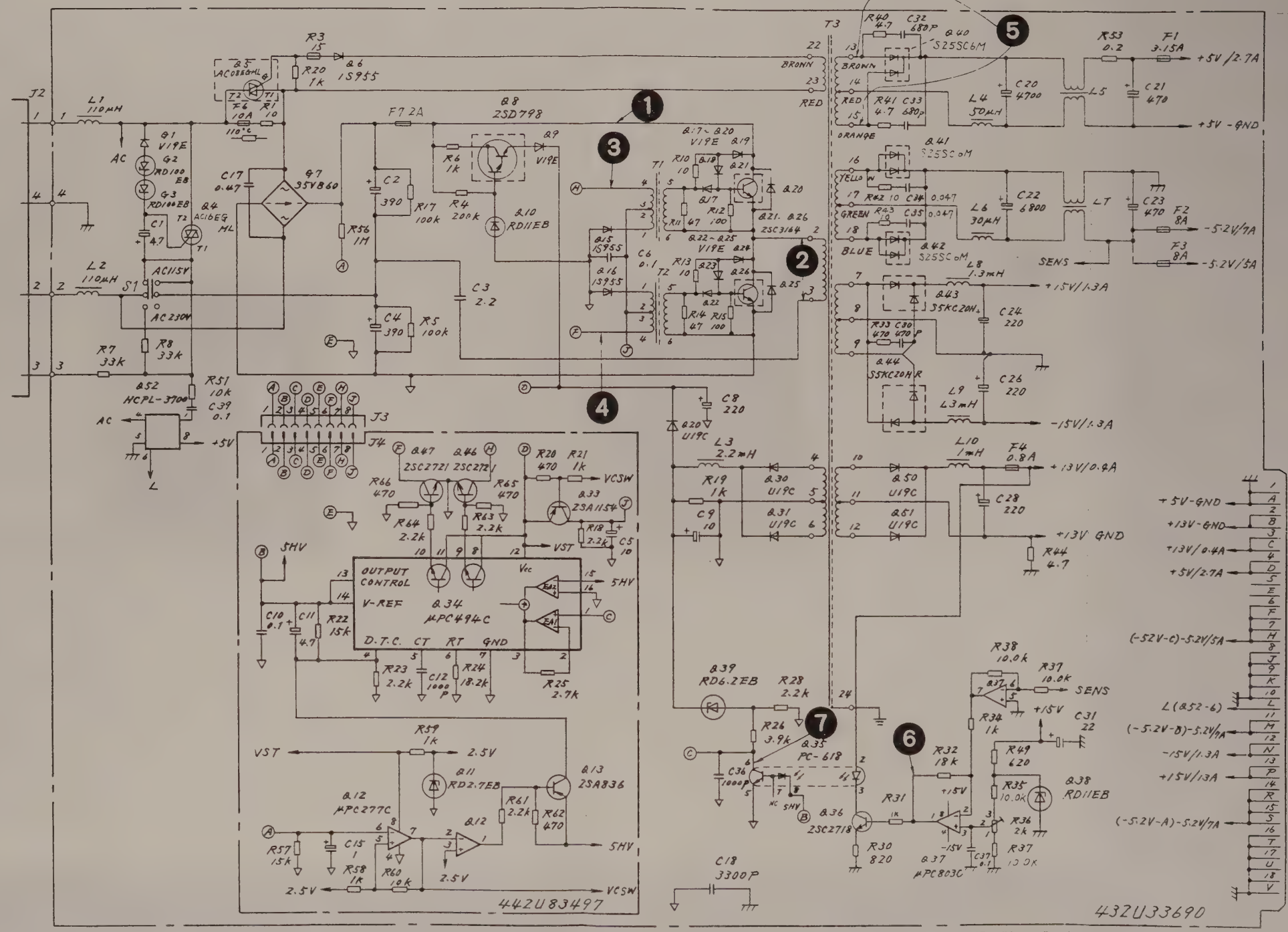


Fig. 3-12 Parts Layout of T-Z7
POWER SUPPLY P.C. Board 7

43W34331 1/1

APPLICATION

REVISIONS



PC Board	432U33690
Parts List	44W84796

QTY.	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

TITLE: T-Z7 POWER SUPPLY CIRCUIT DIAGRAM

DRAWING No: 43W34331 1/1

ANRITSU CORP.

ME520B

7

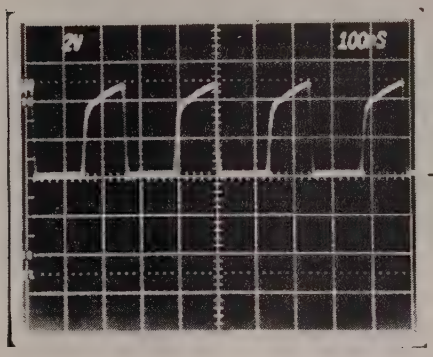
DEP

No 0023-1985 08

3.5.2 T-Z1 CPU 2 P.C. Board

(1) Troubleshooting

(a) Check the TP ❶ signal waveform using the oscilloscope; then check that the signal frequency is 4.096 MHz.

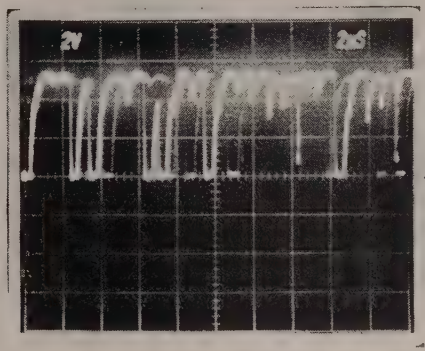


V: 2V/div
H: 100ns/div

Fig. 3-13 TP ❶ Waveform of T-Z1

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b) Check the TP ❷ signal waveform using the oscilloscope.



V: 2V/div
H: 2µs/div

Fig. 3-14 TP ❷ Waveform of T-Z1

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(c) Check the TP ❸ signal waveform using the oscilloscope.

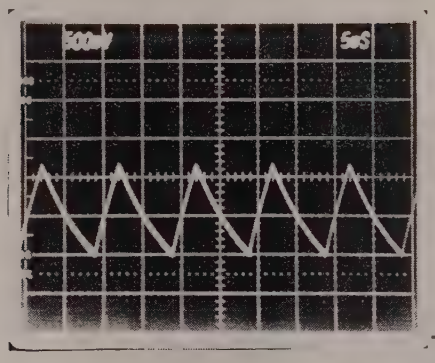


Fig. 3-15 TP ❸ Waveform of T-Z1

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(d) Check the TP ❹ signal waveform the using the oscilloscope.

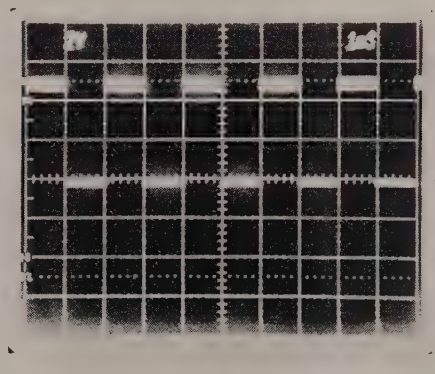
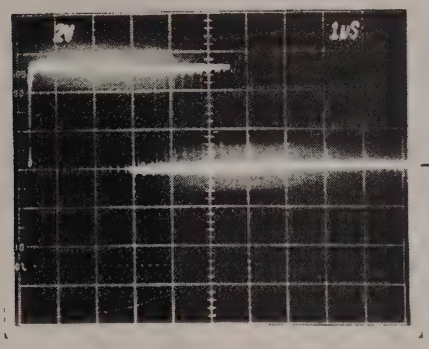


Fig. 3-16 TP ❹ Waveform of T-Z1

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(e) Check the TP ❺ signal waveform using the oscilloscope.

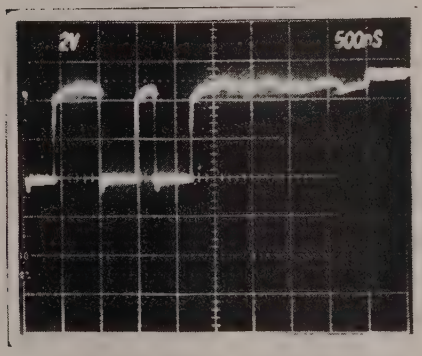


V: 2V/div
H: 1μs/div

Fig. 3-17 TP ❺ Waveform of T-Z1

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(f) Check the TP ❻ signal waveform using the oscilloscope.



V: 2V/div
H: 500ns/div

Fig. 3-18 TP ❻ Waveform of T-Z1

If the above waveform is OK, Z1 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

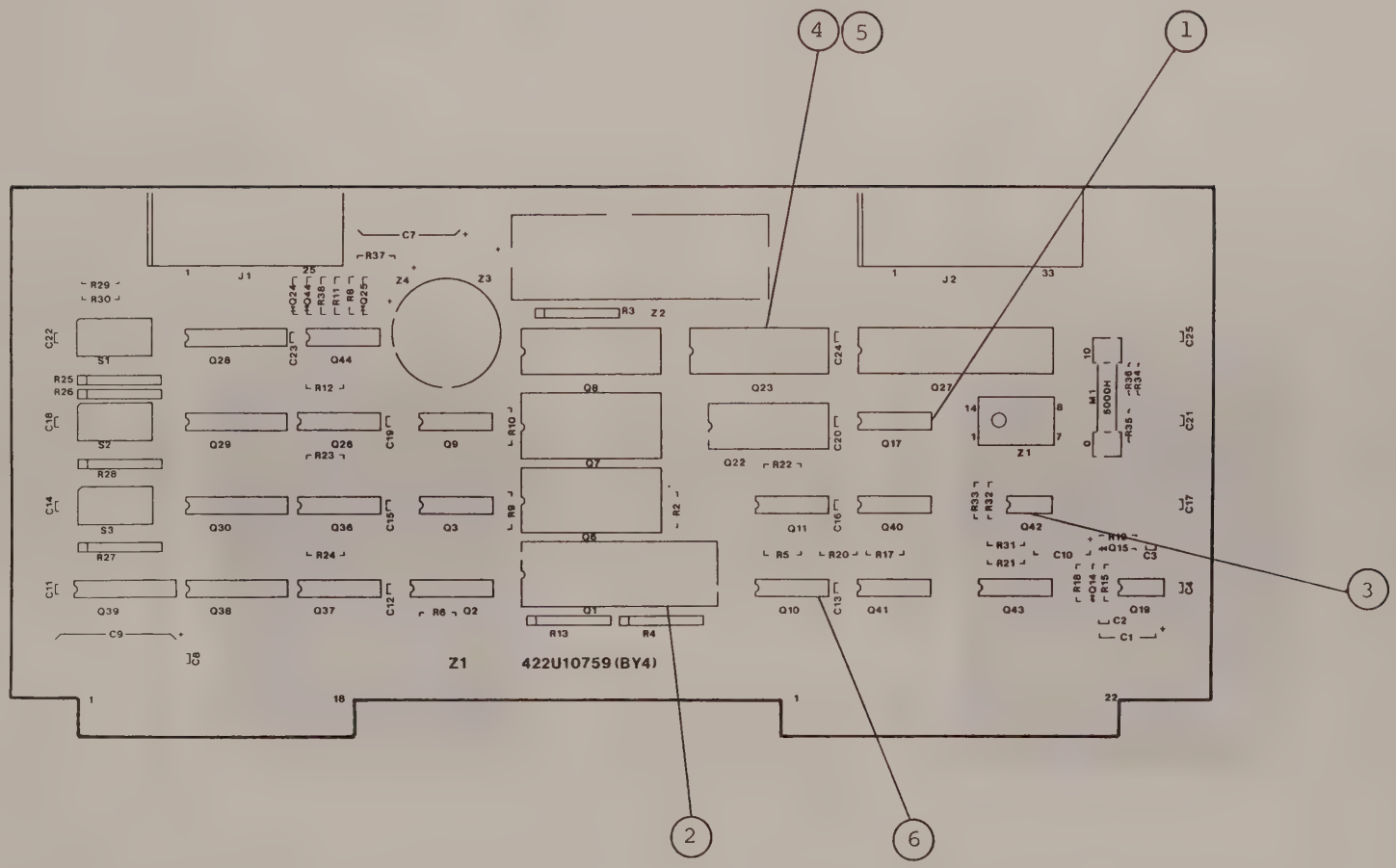
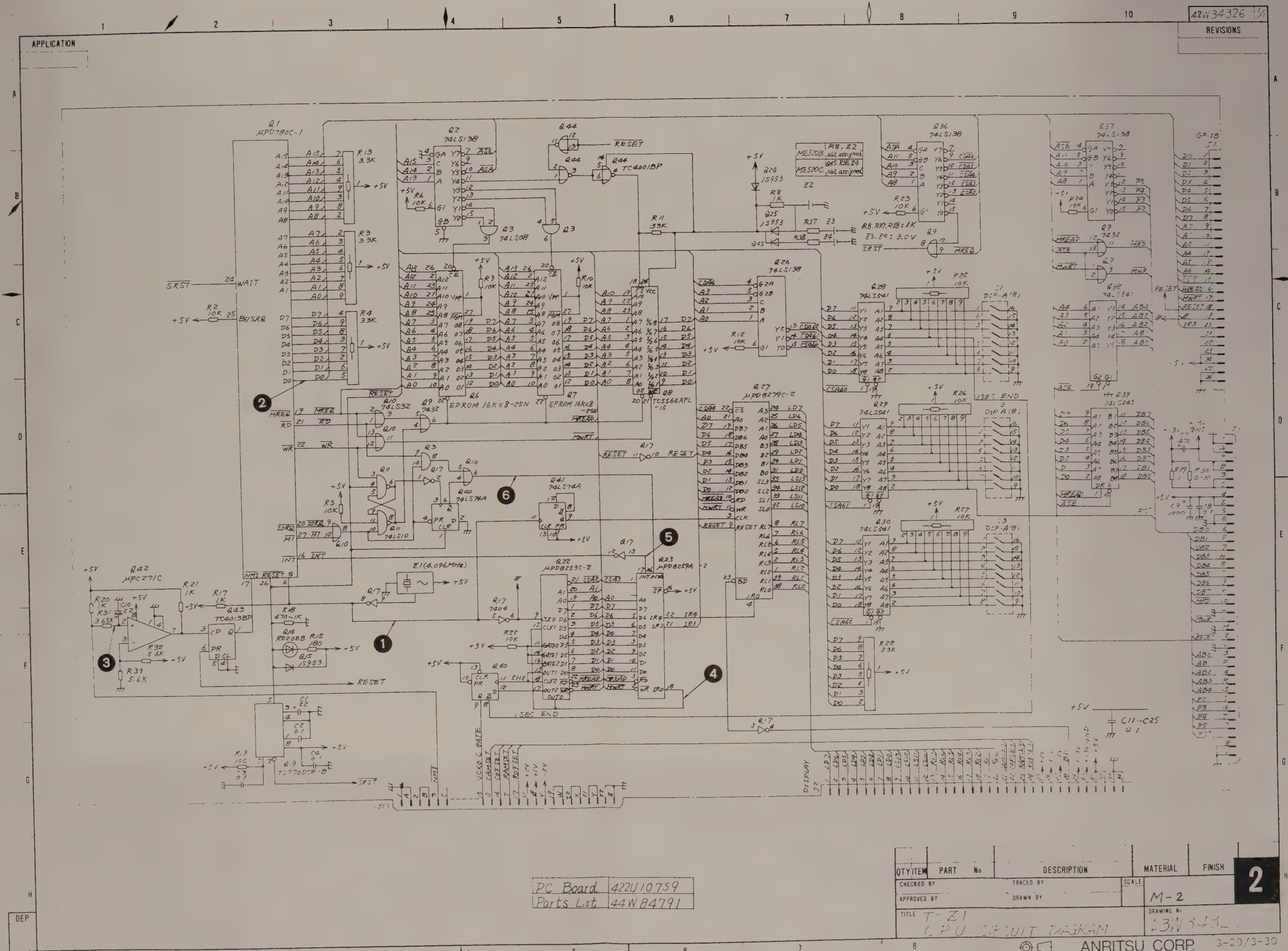


Fig. 3-19 Parts Layout of T-Z1 CPU P.C. Bord 2



42W34326 1/1
REVISIONS
APPLICATION
Q1 μPD780C-1
Q2 74LS138
Q3 74LS08
Q44 TC4001BP
Q6 EPROM 16Kx8-25N
Q7 EPROM 16Kx8-25N
Q8 TC5564APL-15
Q10 74LS32
Q9 7432
Q11 74LS10
Q40 74LS74A
Q41 74LS74A
Q42 μPC271C
Q43 TC4013BP
Q22 μPD8253C-2
Q23 μPD8259A
Q26 74LS138
Q27 μPD8279C-2
Q28 74LS541
Q29 74LS541
Q30 74LS541
Q36 74LS138
Q37 74LS138
Q38 74LS541
Q39 74LS245
Q9 7432
Z1(4.096MHz)
Z2
Z3, Z4 : 3.0V
R8, R37, R38 : 1K
ME520B R8, Z2 Not assigned
ME520C Q45, R38, Z4 Not assigned
SRST
WAIT
BUSRQ
RESET
MREQ
RD
WR
IORQ
INT
NMI
MREAD
MWRT
ASE
GP-IB
DISPLAY
VCKO C GATE
CAMSET
COFSET
RAMSET
ROFSET
1SEC END
DIP A(8)
C11~C25 0.1
PC Board 422U10759
Parts List 44W84791
QTY ITEM PART No DESCRIPTION MATERIAL FINISH
CHECKED BY
TRACED BY
APPROVED BY
DRAWN BY
SCALE M-2
TITLE T-Z1 CPU CIRCUIT DIAGRAM
DRAWING No 43W343
2
ANRITSU CORP.
3-29/3-30
DEP

3.5.3 T-Z2 CLOCK 3 P.C. Board

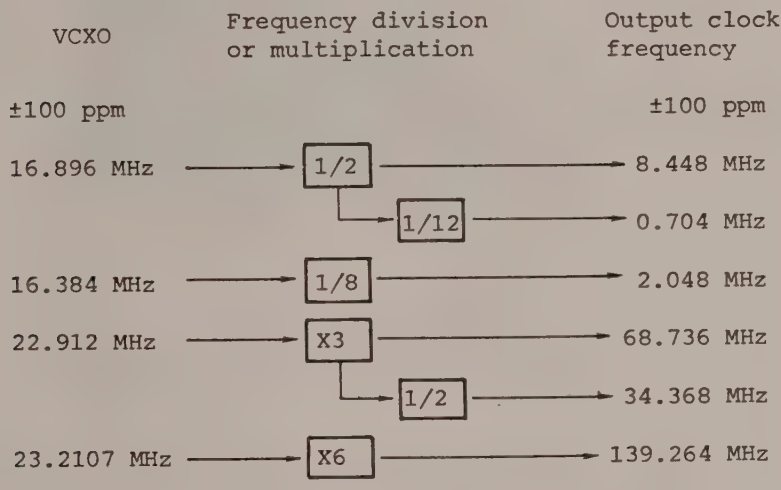
(1) Circuit Description

Fig. 3-20 shows a block diagram of the T-Z2.

This circuit uses a voltage-controlled crystal oscillator (VCXO) as the reference oscillator.

VCXO reference signal is divided and multiplied, and are output as the respective clock signals.

The relationship between the VCXO and the output clock frequencies is listed below:



These clock frequencies are stabilized by the AFC loop that passes through the counter circuit and CPU BUS.

The jitter modulation is obtained by varying the phase-locked-loop reference voltage and adding phase modulation to VCO. The output clock frequency is divided to one sixth and is input to the phase detector (PD).

The VCO signal frequency is divided into one sixth and is input to the other terminal of the PD. The PD output is filtered by the carrier filter and is input to the operational amplifier and then this output controls the VCO frequencies.

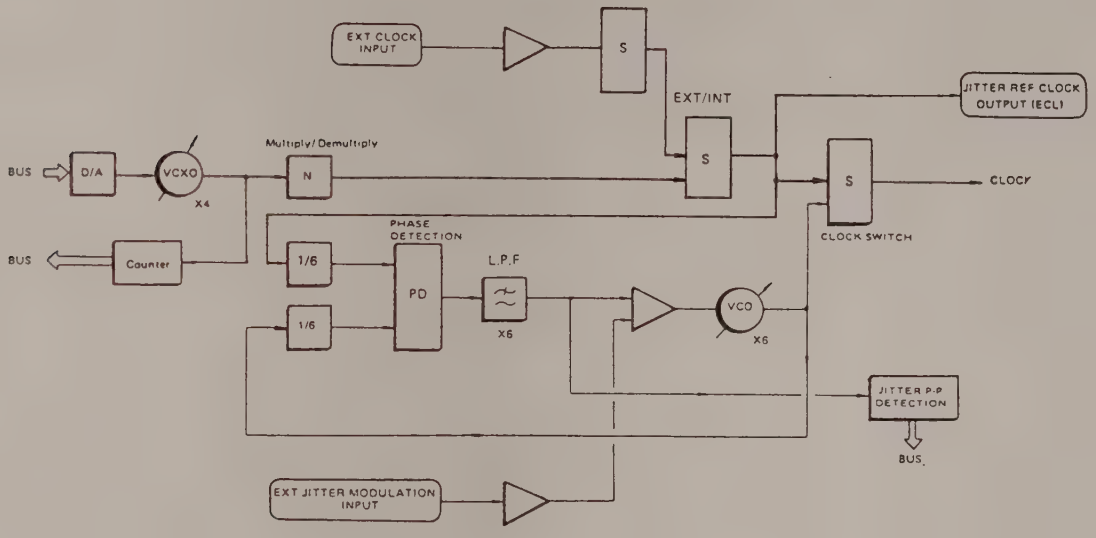


Fig. 3-20 T-Z2 CLOCK Block Diagram

(2) Troubleshooting and adjustment

Remove the T-Z2 PC board as described in paragraph 2.2.3 (5) and insert it into adjustment connectors J6 and J16 of the T-Z10 mother board. (See Fig. 3-21.)

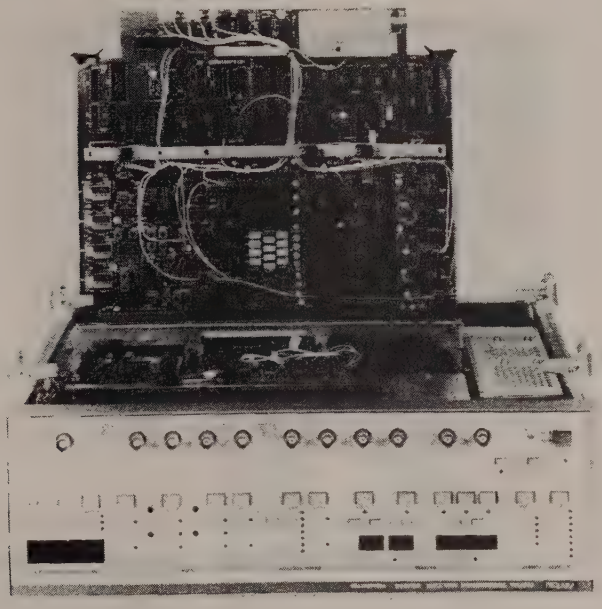
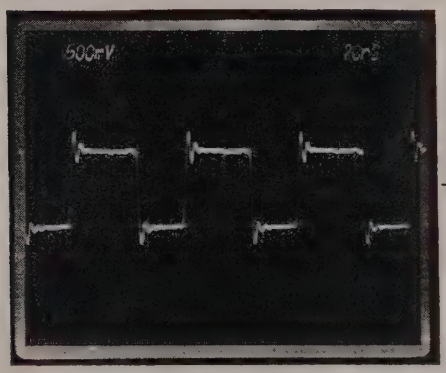


Fig. 3-21 T-Z2, Z3, (Z5) P.C. Board Troubleshooting Configuration

(a)
BIT RATE	;	8448 kb/s
FORMAT	;	AMI
FREQ OFFSET/JITTER MOD	;	OFF

Check the TP ❶ signal waveform using the oscilloscope.



V: 500mV/div
H: 20ns/div

Fig. 3-22 TP ❶ Waveform of T-Z2

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q34 and Q50 control signal status.

Table 3-6

Pin No.	Status
Q34-4	TTL-H
Q50-5	ECL-L
Q50-11,12	ECL-L

2) Check the VCXO (Z2) circuit

After performing the above test, troubleshoot the circuit(s) near the faulty test point.

(b) [BIT RATE ; 68736 kb/s
FORMAT ; CMI
FREQ OFFSET/JITTER MOD ; OFF]

Check the TP ❷ signal waveform using the oscilloscope.

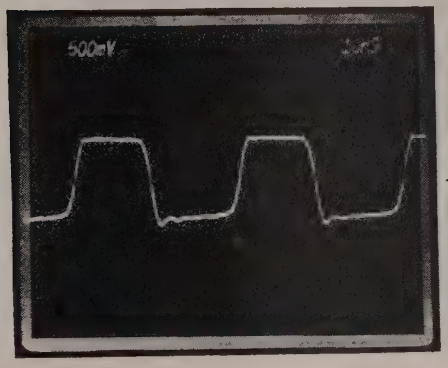


Fig. 3-23 TP ❷ Waveform of T-Z2

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check whether the Q34-3 pin status reaches the TTL high level.

2) Check the VCXO (Z3) circuit

After performing the above test, troubleshoot the circuit(s) near the faulty test point.

(c) [BIT RATE ; 139264kb/s
FORMAT ; CMI
FREQ OFFSET/JITTER MOD ; OFF]

Check the TP ❸, ❹, and ❺ signal waveforms using the oscilloscope.

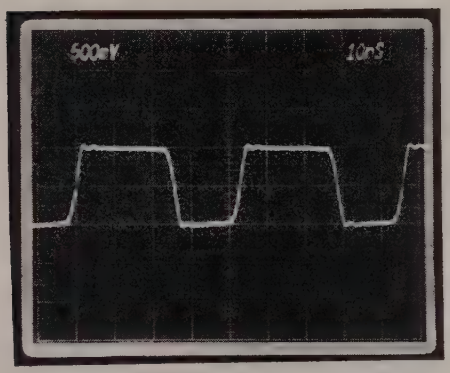


Fig. 3-24 TP ❸ Waveform of T-Z2

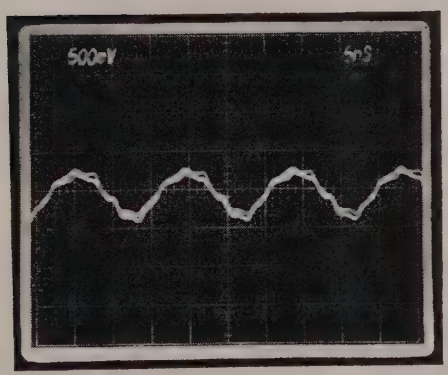


Fig. 3-25 TP ❹ Waveform of T-Z2

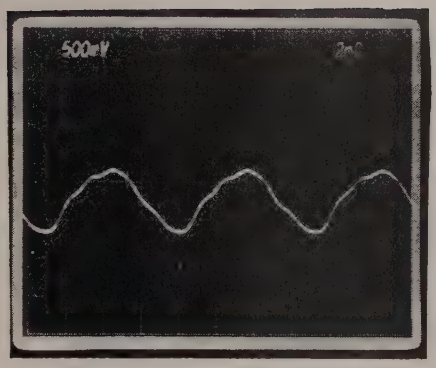


Fig. 3-26 TP ❺ Waveform of T-Z2

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check whether the Q34-2 pin status reaches the TTL high level.

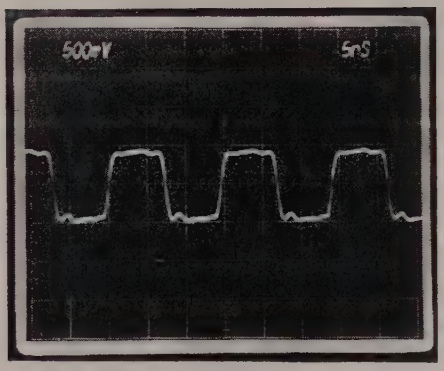
2) Check the VCXO (Z4) circuit.

After performing the above test, troubleshoot the circuit(s) near the faulty test point.

(d)

BIT RATE	;	68736 kb/s
FORMAT	;	CMI
FREQ OFFSET/JITTER DEM	;	OFF

Check the TP ❻ signal waveform using the oscilloscope.



V: 500 mV/div
H: 5ns/div

Fig. 3-27 TP ❻ Waveform of T-Z2

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q63 and Q64 control signal status.

Table 3-7

Pin No.	Status
Q63-4	ECL-H (Level)
Q63-7	ECL-H
Q63-10	ECL-H
Q64-4	ECL-L
Q64-7	ECL-H
Q64-10	ECL-H

H: High level
L: Low level

If not OK after performing the above test, perform the following adjustment.

1) Adjustment

FORMAT	;	CMI
FREQ OFFSET/JITTER MOD	;	OFF

i) Set bit rate to 68736-kb/s.

Adjust the R89 for 50% duty by observing the TP ❻ waveform using the oscilloscope.

ii) Set bit rate to 139264-kb/s.

Adjust the R123 for 50% duty by observing the TP ❻ waveform using the oscilloscope.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

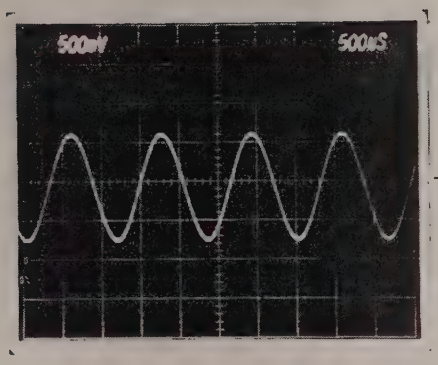
(e)

BIT RATE	;	704 kb/s
FORMAT	;	AMI
FREQ OFFSET/JITTER MOD	;	JITTER MODULATION

Input external signal whose frequency is approximately 0.8 kHz to the EXT JITTER MODULATION INPUT connector of the ME520B(T).

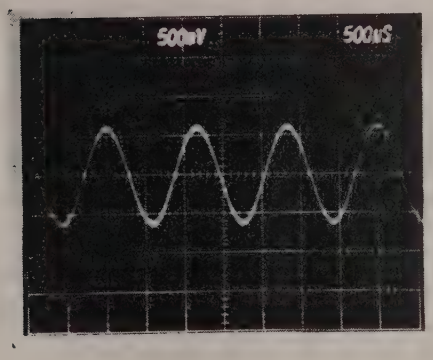
Adjust the external signal level so that the jitter modulation (UI-pp) display of the ME520B(T) can be set to 5.00.

Check the TP ❼ and TP ❽ signal waveforms using the oscilloscope.



V: 500mV/div
H: 500µs/div

Fig. 3-28 TP ❼ Waveform of T-Z2



V: 500mV/div
H: 500µs/div

Fig. 3-29 TP ❽ Waveform of T-Z2

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following work.

1) When the TP ❼ waveform is abnormal, replace Q98.

2) When the TP ❽ waveform is abnormal, check the PD, LPF circuit and repair the faulty part.

After performing the above work, perform the following adjustment.

[Adjustment]

(Refer to the "Jitter Display Accuracy" measurement procedure described in paragraph 6.4.13 of operation manual.)

i) Set bit rate to 704-kb/s.

ii) Make the same measurement as described in paragraph 6.4.13 of operation manual.

iii) At this time, adjust the R176 and R190 volumes so that the JITTER MOD display can be set to 10.00

iv) As the same as above, change the bit rate and adjust the corresponding resistor shown on Table 3-8.

Table 3-8

BIT RATE (kb/s)	Adjustable R
2048	R178, R192
8448	R180, R194
34368	R182, R196
68736	R184, R198
139264	R186, R200

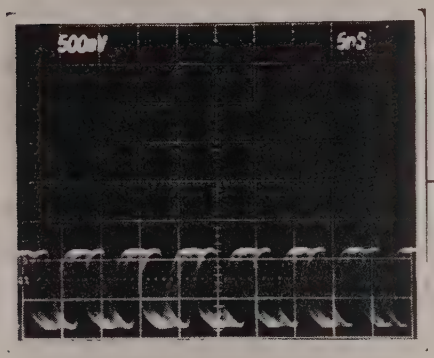
If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(f)
BIT RATE	;	139264 kb/s
FORMAT	;	NRZ
FREQ OFFSET/JITTER MOD	;	JITTER MODULATION

An external signal with a frequency of 1 kHz is input to the EXT JITTER MODULATION INPUT connector of the ME520B(T).

Adjust the external signal level so that the jitter modulation (UI-pp) display of the ME520B(T) can be set to 0.5.

Check the TP ❾ signal waveform using the oscilloscope.



V: 500mV/div
H: 5ns/div

Fig. 3-30 TP ❾ Waveform of T-Z2

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following adjustment.

1) Adjustment

i) Set the EXT JITTER MODULATION INPUT connector open.

ii) Set the bit rate 704 kb/s.

iii) Adjust the R286 for 50% duty by observing the TP ❾ waveform using the oscilloscope.

iv) As the same as above, change the bit rate and adjust the corresponding resistor shown on Table 3-9.

Table 3-9

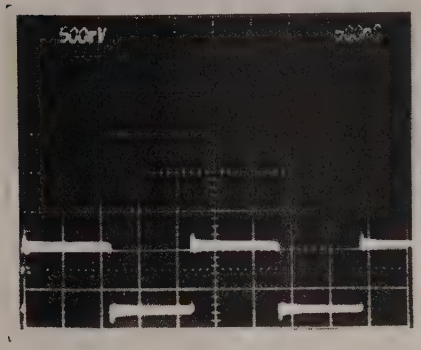
BIT RATE (kb/s)	Adjustable R
2048	R292
8448	R297
34368	R304
68736	R312
139264	R318

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(g)
BIT RATE	;	EXT (500 kb/s)
FORMAT	;	NRZ
FREQ OFFSET/JITTER MOD	;	OFF

Input a rectangular signal with a frequency of 500 kHz and with an output voltage of 1 Vp-p to the EXT CLOCK INPUT connector (rear panel) of the ME520B(T). (See paragraph 6.4.13 of operation manual.)

Check the TP ⑩ signal waveform using the oscilloscope.



V: 500mV/div
H: 500ns/div

Fig. 3-31 TP ⑩ Waveform of T-Z2

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following adjustment.

1) Adjustment

Adjust the R386 for 50% duty by observing the TP ⑩ waveform using the oscilloscope.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

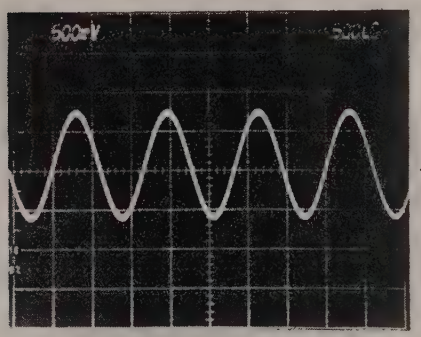
(h)

BIT RATE	;	34368 kb/s
FORMAT	;	NRZ
FREQ OFFSET/JITTER MOD	;	JITTER MODULATION

Input an external signal with a frequency of approximately 0.8 kHz to the EXT JITTER MODULATION INPUT connector of the ME520B(T).

Adjust the external signal level so that the jitter modulation (UI-pp) display of the ME520B(T) can be set to 5.00.

Check the TP ⑪ to TP ⑭ signal waveforms using the oscilloscope.



V: 500mV/div
H: 500μs/div

Fig. 3-32 TP ⑪ Waveform of T-Z2

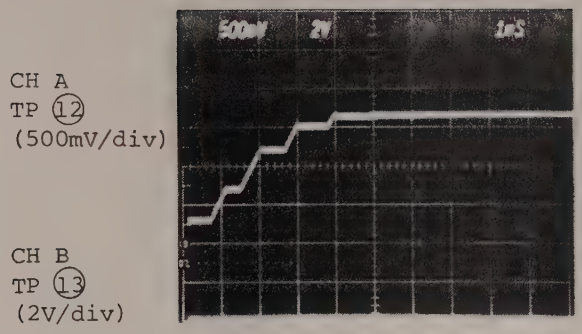


Fig. 3-33 TP ⑫ , ⑬ Waveform of T-Z2

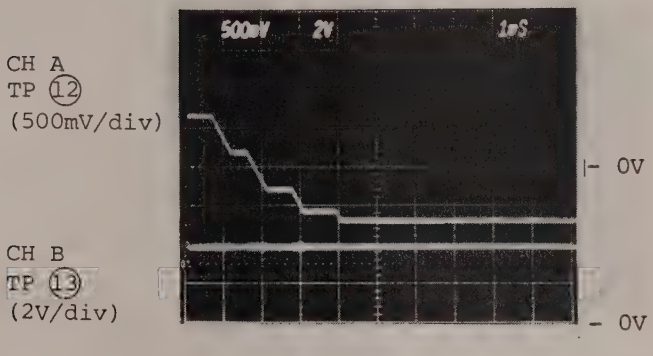


Fig. 3-34 TP ⑫ , ⑬ Waveform of T-Z2

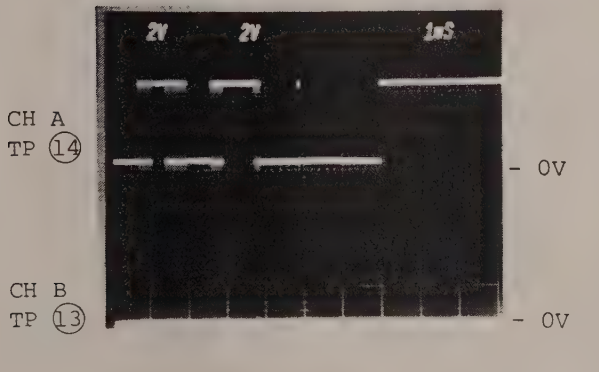
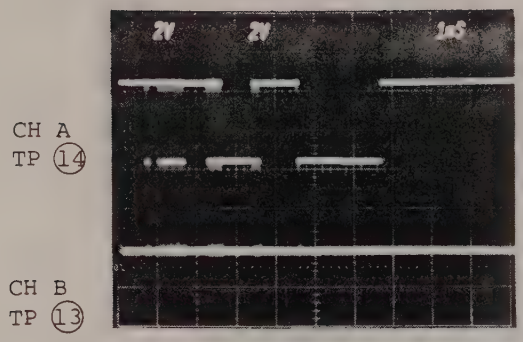
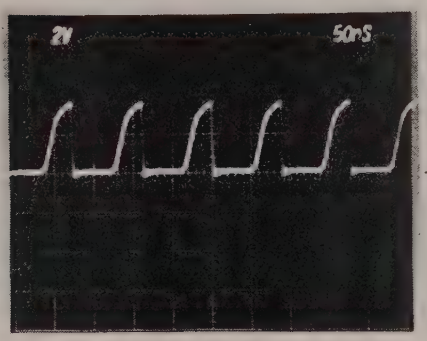


Fig. 3-35 TP ⑭ , ⑬ Waveform of T-Z2



Trigger: CH B+
V: 2V//div
H: 2ms/div

Fig. 3-36 TP ⓮ , ⓭ Waveform of T-Z2



V: 2V/div
H: 50ns/div

Fig. 3-37 TP ⓯ Waveform of T-Z2

If the above waveforms are OK, Z2 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

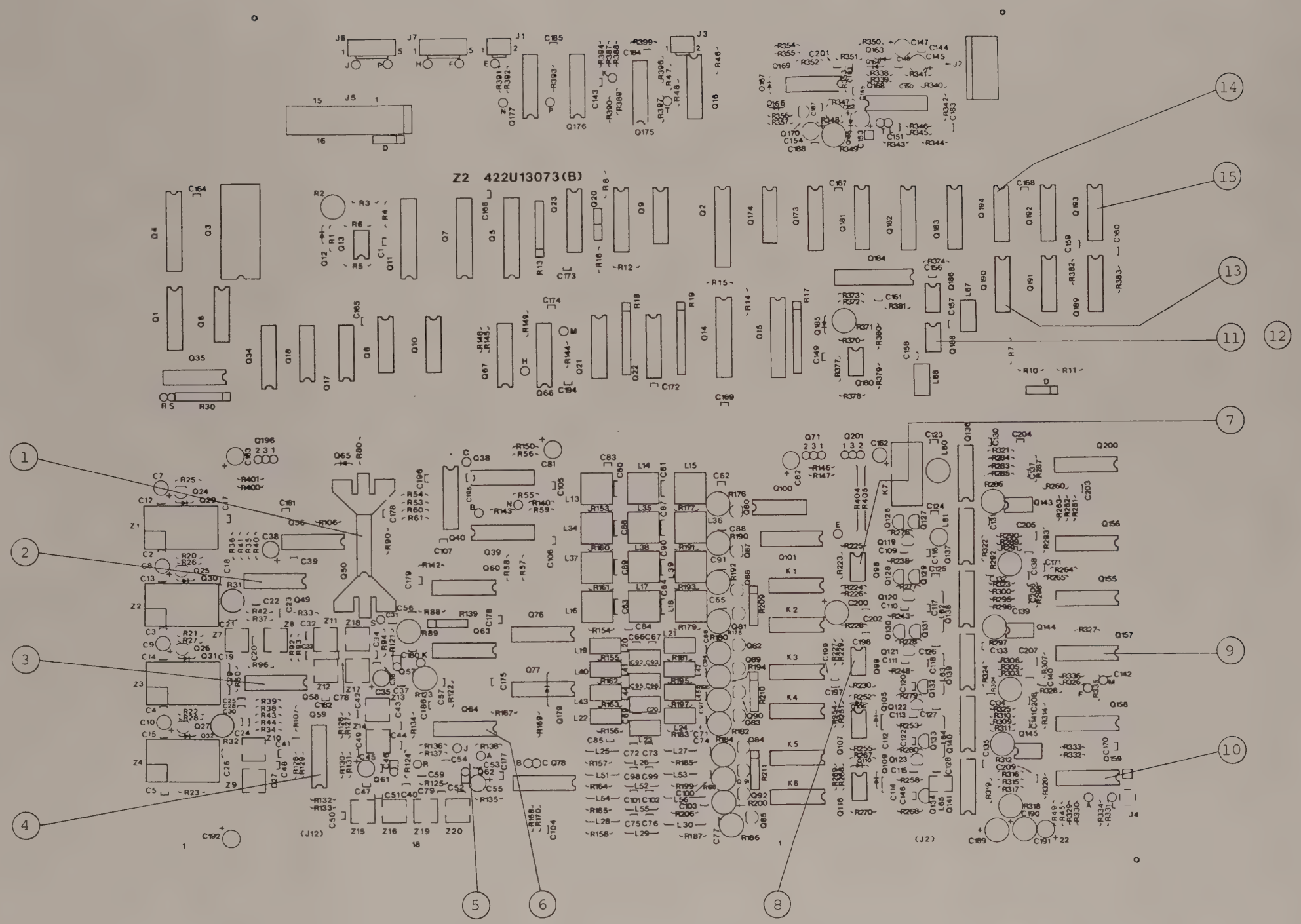


Fig. 3-38 Parts Layout of T-Z2 CLOCK P.C. Board 3

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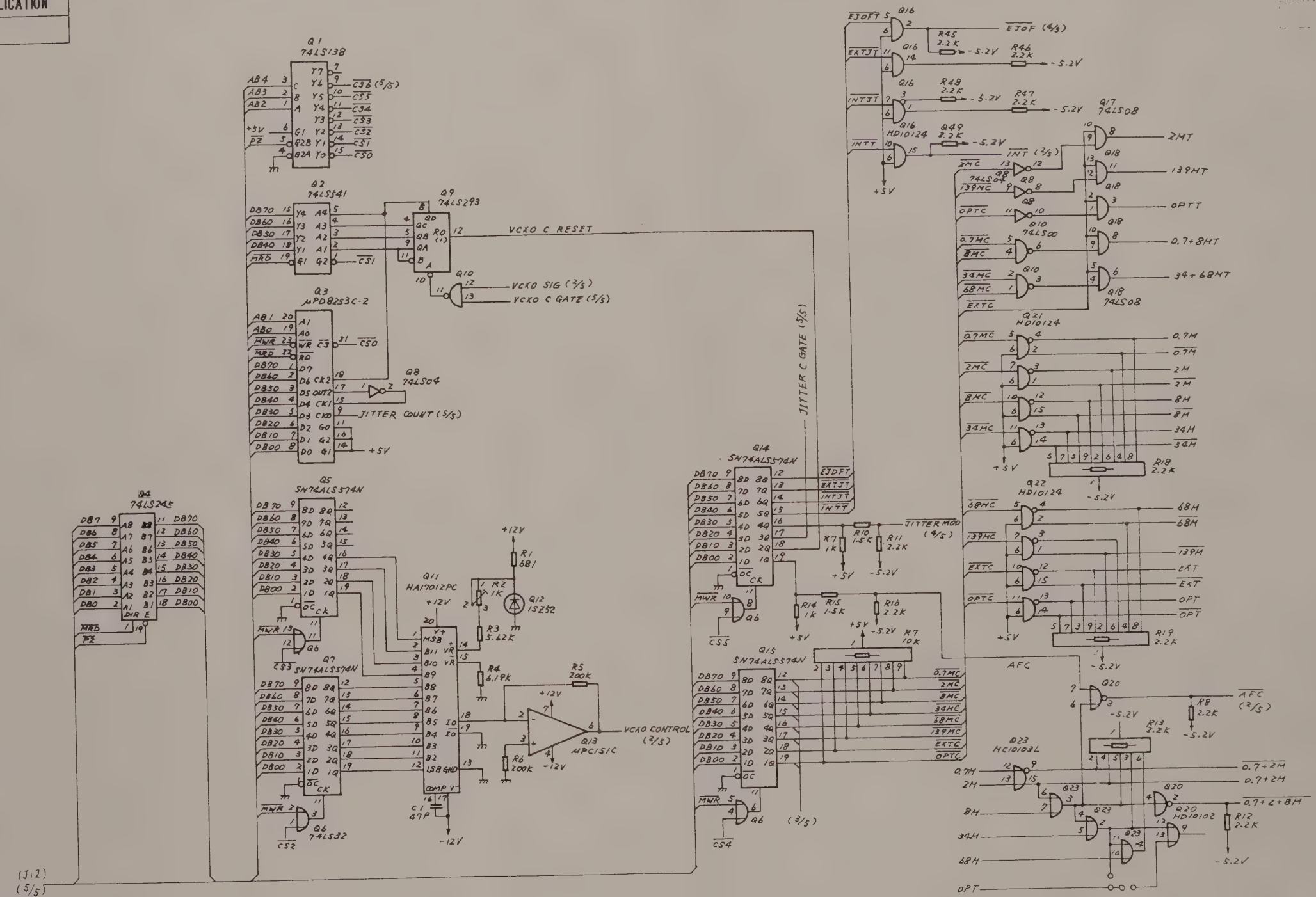
APPLICATION

REVISIONS



PC Board	422U13073
Parts List	44W84792

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

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TITLE: T-Z2 CLOCK CIRCUIT DIAGRAM

DRAWING No: 43W34327 1/5

3

ANRITSU CORP.

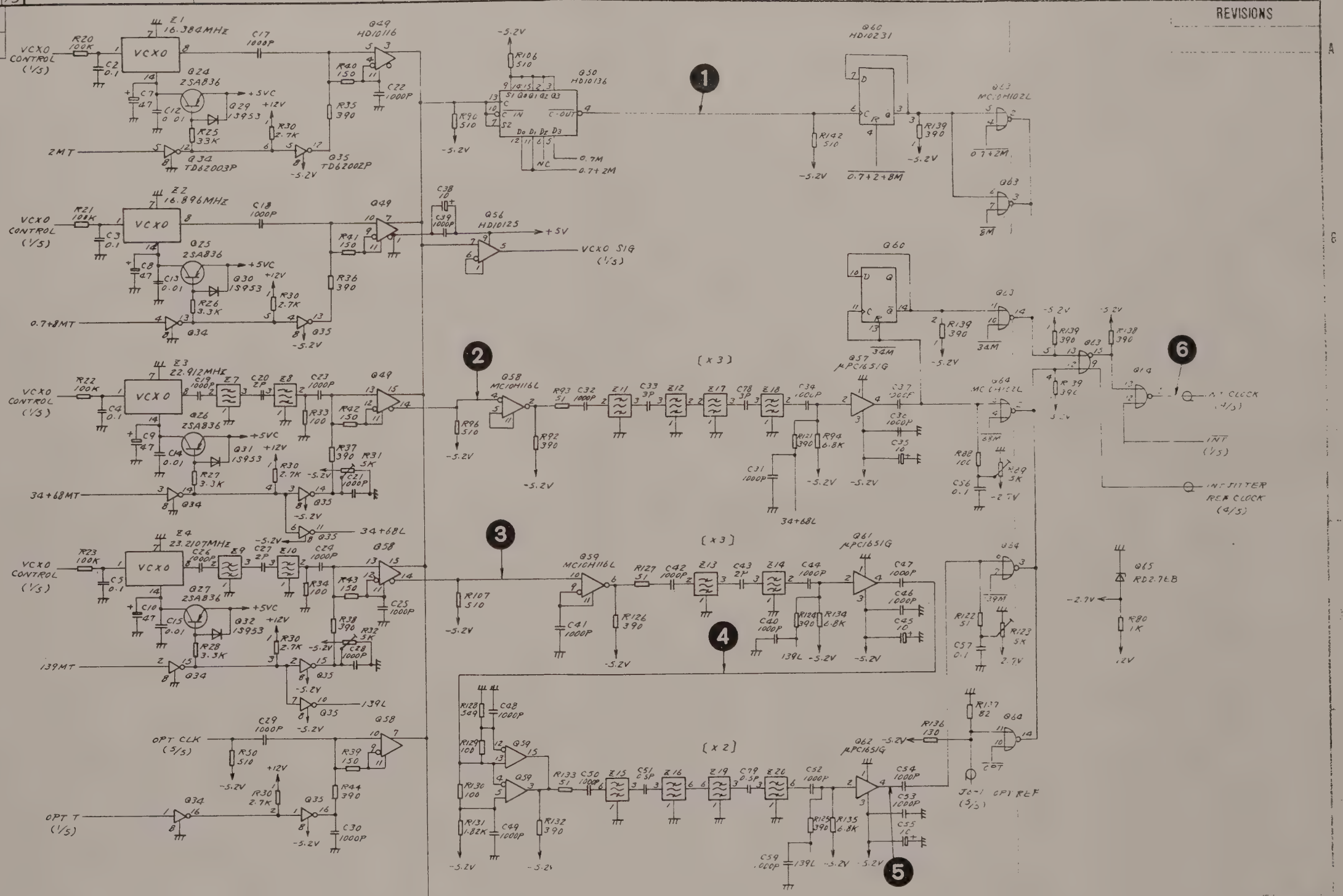
3-49/3-50

DEP

No. 0023-1985.08

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

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APPROVED BY | DRAWN BY

TITLE: T-Z2 CLOCK CIRCUIT DIAGRAM

DRAWING No: 43W34327 2/5

3

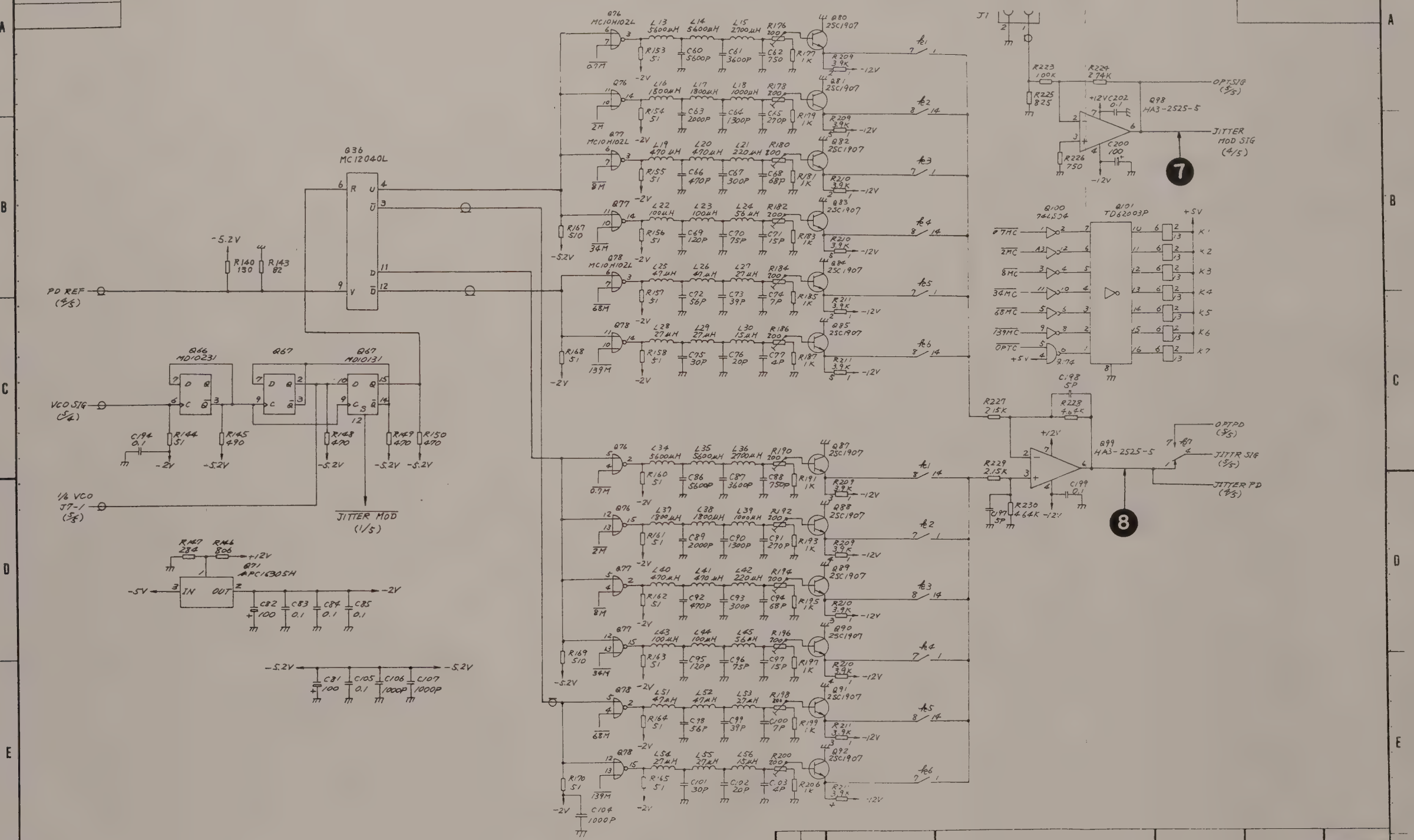
DEP

ANRITSU CORP.

3-51/3-52

APPLICATION

REVISIONS



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TITLE: T-Z2 CLOCK CIRCUIT DIAGRAM

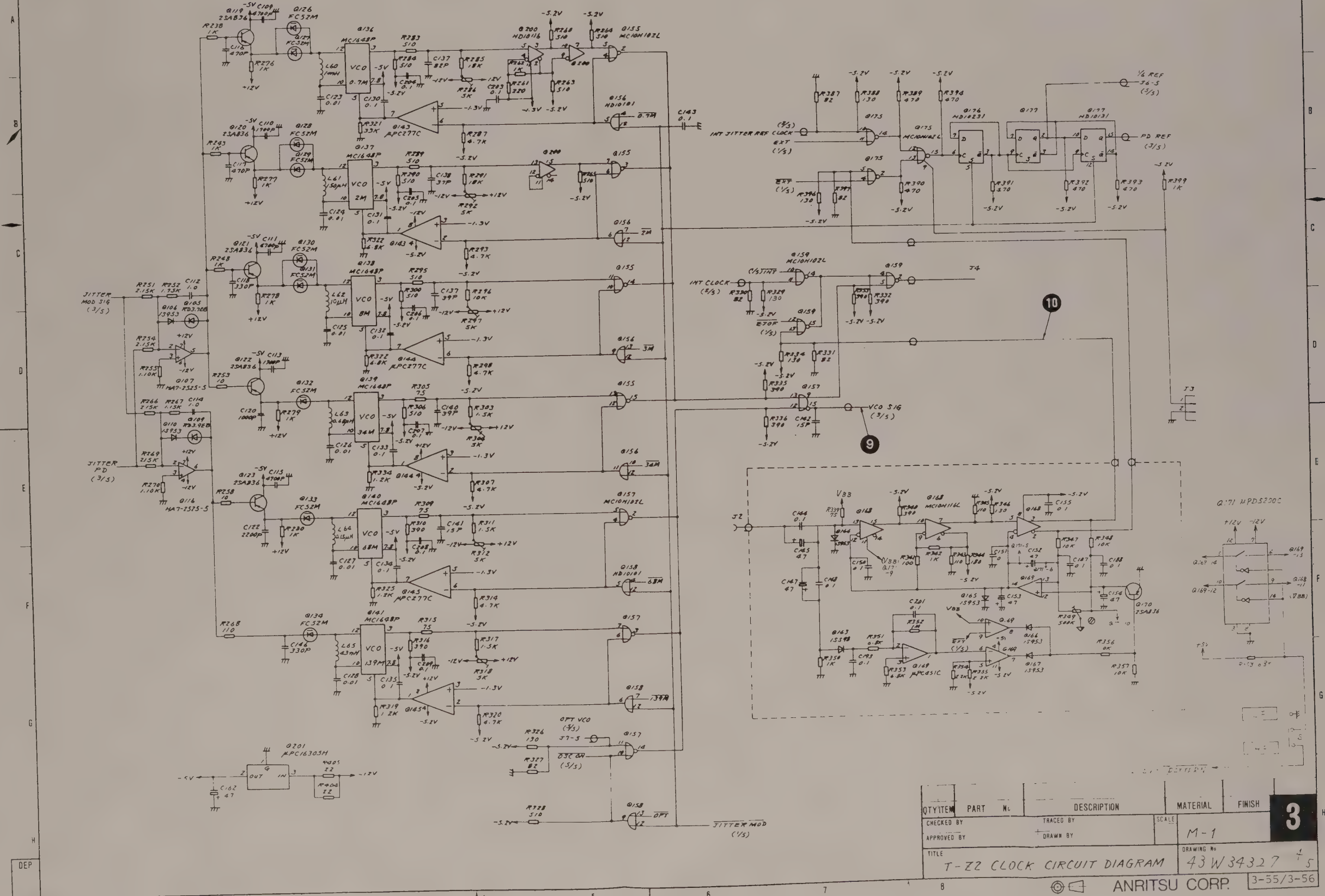
DRAWING No. 43W34327 3/5

DEP

43W34327 4/5

REVISIONS

APPLICATION



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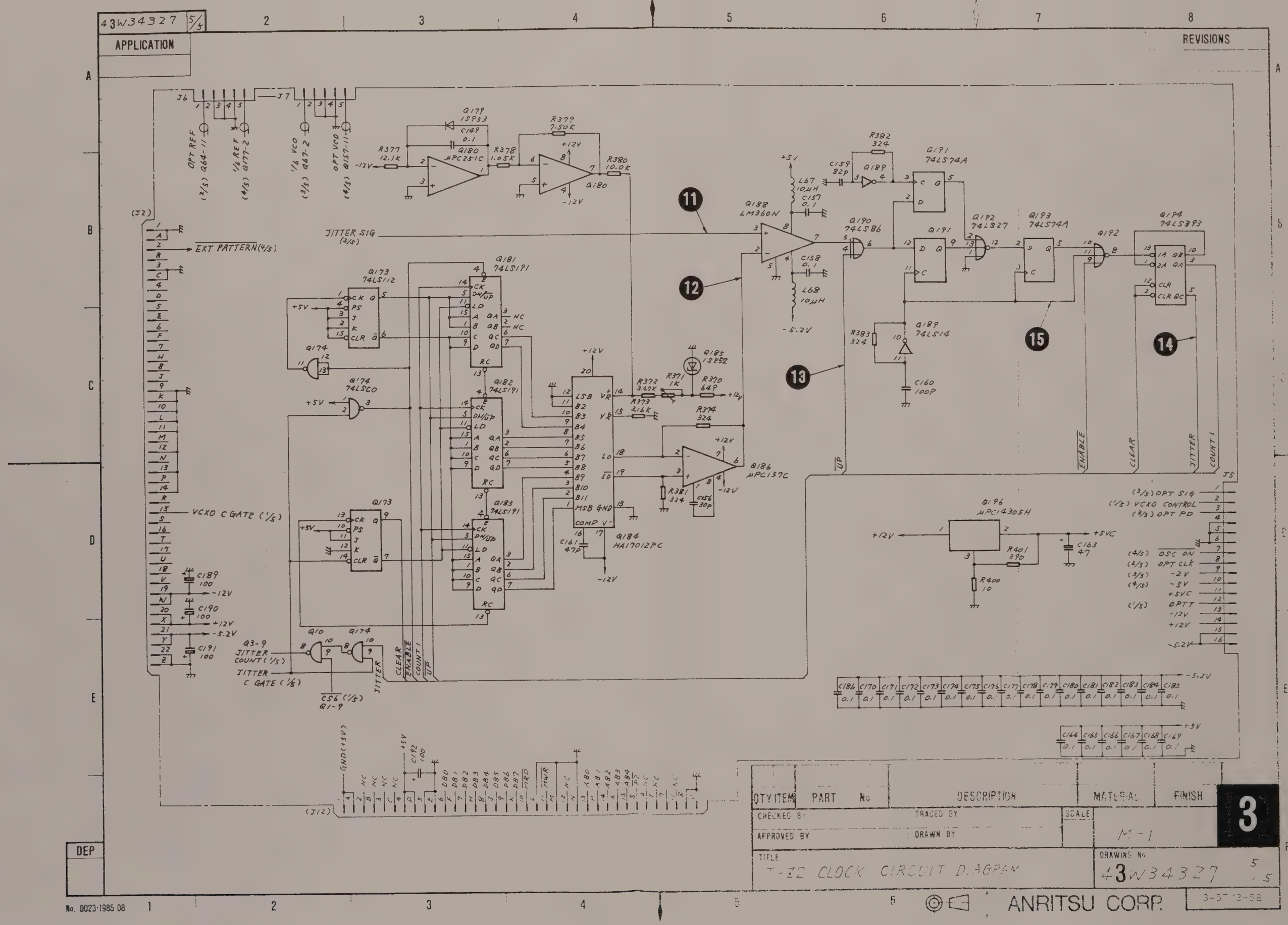
APPROVED BY		DRAWN BY			
TITLE	T-Z2 CLOCK CIRCUIT DIAGRAM			DRAWING No	43W34327 4/5

3

ANRITSU CORP. 3-55/3-56


43W34327 5/5
APPLICATION
REVISIONS
J6
J7
OPT REF (2/5) Q64-11
1/6 REF (4/5) Q177-2
1/6 VCO (3/5) Q67-2
OPT VCO (4/5) Q157-11
Q179 1S953
C149 0.1
Q180 μPC251C
R377 12.1K
R378 1.05K
R379 7.50K
R380 10.0K
Q180
+12V
-12V
JITTER SIG (3/5)
EXT PATTERN (4/5)
(J2)
Q173 74LS112
Q174 74LS00
Q181 74LS191
Q182 74LS191
Q183 74LS191
Q184 HA17012PC
Q185 1SE52
Q186 μPC157C
Q188 LM360N
L67 10μH
C157 0.1
C158 0.1
L68 10μH
-5.2V
+5V
C159 82P
Q189
R382 324
Q191 74LS74A
Q190 74LS86
Q192 74LS27
Q193 74LS74A
Q194 74LS393
Q189 74LS14
R383 324
C160 100P
R372 3.40K
R371 1K
R370 649
R373 3.16K
R374 324
R381 324
C156 30P
C161 47P
VCXO C GATE (1/5)
C189 100
C190 100
C191 100
Q3-9 JITTER COUNT (1/5)
JITTER C GATE (1/5)
CS6 (1/5) Q1-9
Q10
Q174
JITTER
CLEAR
ENABLE
COUNT 1
UP
Q196 μPC14305H
R401 390
R400 10
C163 47
+5VC
(3/5) OPT SIG
(1/5) VCXO CONTROL
(3/5) OPT PD
(4/5) OSC ON
(2/5) OPT CLK
(3/5) -2V
(4/5) -5V
+5VC
(1/5) OPTT
-12V
+12V
-5.2V
C186 C170 C171 C172 C173 C174 C175 C176 C177 C178 C179 C180 C181 C182 C183 C184 C185
C164 C165 C166 C167 C168 C169
GND(+5V)
C192 100
(J12)
11
12
13
14
15
DEP
QTY ITEM
PART No
DESCRIPTION
MATERIAL
FINISH
CHECKED BY
TRACED BY
APPROVED BY
DRAWN BY
SCALE
M-1
TITLE
T-22 CLOCK CIRCUIT DIAGRAM
DRAWING No
43W34327
5/5
3
No. D023-1985 08
ANRITSU CORP.
3-57/3-58

3.5.4 T-Z3 PATTERN GENERATOR 4 P.C. Board

(1) Circuit Description

PRBS:

The two pattern routes of the half-clock data A and data B are generated at half the clock frequency by a shift register.

WORD:

Words with a preset arbitrary length are extracted for each bit and are stored in each data area as half-clock data A and data B.

Half-clock data A and data B are generated by sequentially reading them with the data read counter.

The trigger pulse is synchronously generated with the final bit of "0" (zero) consecutive patterns for PRBS or when the output of the data read counter is set to "0" (zero) for WORD.

The PRBS and WORD are selected by the switch and are sent by the format of data A and data B through the bit error insertion circuit.

For bit errors corresponding to the preset error rate, the insertion period is counted and added by the error insertion counter.

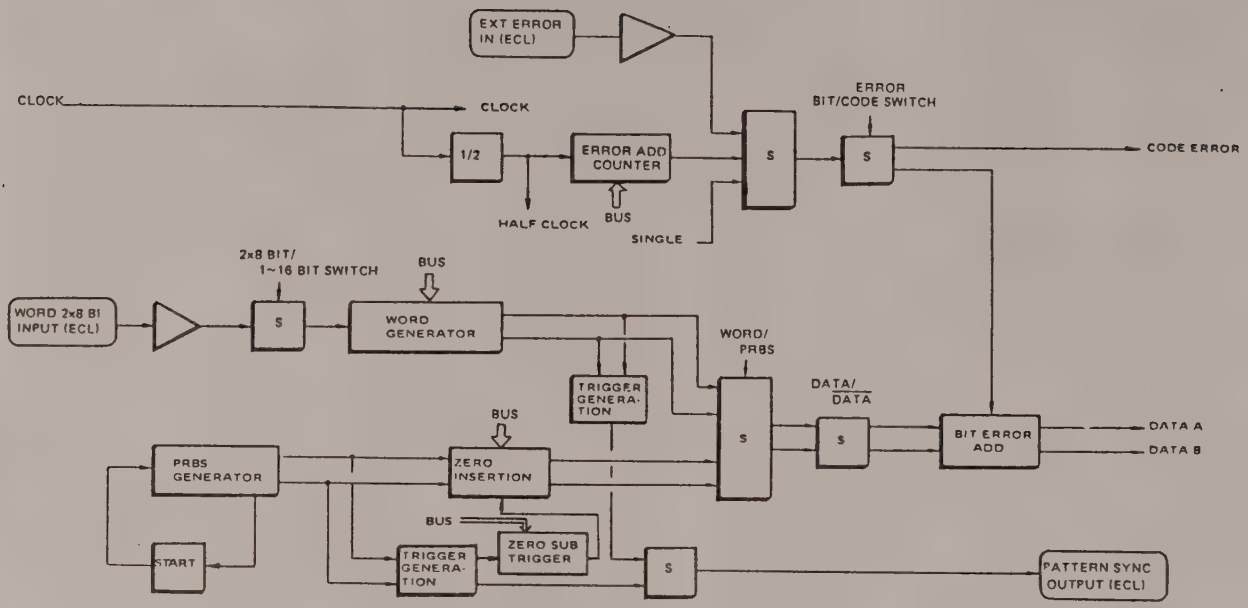


Fig. 3-39 T-Z3 PATTERN GENERATOR Block Diagram

(a) PRBS GENERATOR

The PRBS is a 2^n-1 bit long repetitive sequence generated by an n-stage shift register with exclusive-OR feedback configuration.

[Example: 2^4-1]

If the PRBS generator shown in Fig. 3-40 can be expressed as a characteristic polynominal $1 \oplus X \oplus X4 = 0$ (where $\oplus$ = exclusive - OR function and X^n = data output signal delayed by n-bits), and this generator produce a maximal sequence length of 2^4-1 (15-bits).

The ME520B(T) can produce the following three PRBS sequences.

$2^{10}-1,\ 1 \oplus X^7 \oplus X^{10} = 0$ produced by a 10-stage register

$2^{15}-1,\ 1 \oplus X^{14} \oplus X^{15} = 0$ produced by a 15-stage register

$2^{23}-1,\ 1 \oplus X^{18} \oplus X^{23} = 0$ produced by a 23-stage register

These polynominal produce maximal length sequences of $2^{10}-1$ (1023 bits), $2^{15}-1$ (32767 bits), and $2^{23}-1$ (8388607 bits) respectively.

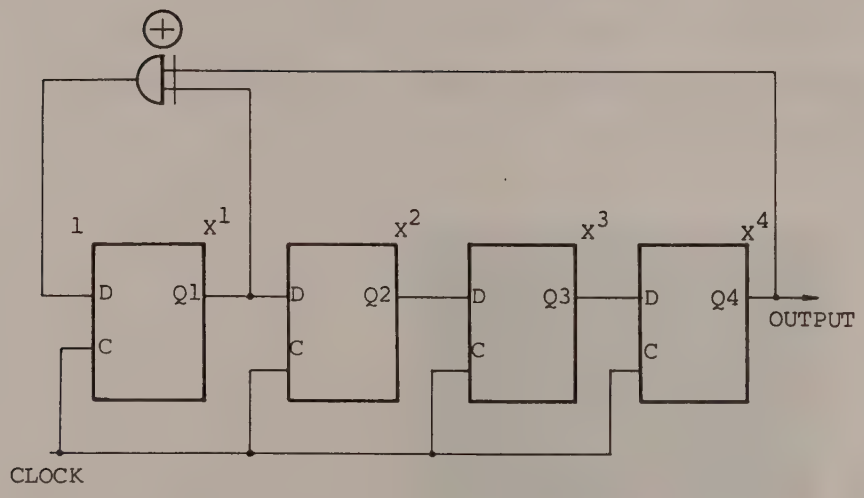


Table 3-10

Truth Table

X1	X2	X3	X4
1	1	1	1
0	1	1	1
1	0	1	1
0	1	0	1
1	0	1	0
1	1	0	1
0	1	1	0
0	0	1	1
1	0	0	1
0	1	0	0
0	0	1	0
0	0	0	1
1	0	0	0
1	1	0	0
1	1	1	0
1	1	1	1

15bits

Fig. 3-40 Typical PRBS Generator ($2^4-1,\ 1 \oplus X \oplus X^4 = 0$)

The PRBS generator is designed to prevent the all-zero state from occuring, as the generator cannot leave from that condition. (See START circuit in Fig. 3-39).

CAUTION

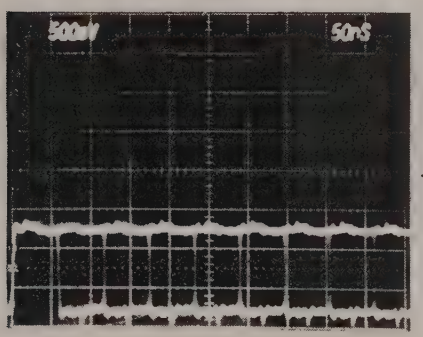
The ME520B(T) PRBS output data is obtained by inverting the data produced based on the polynominals mentioned above.

(2) Troubleshooting

Remove the Z3 PC board according to paragraph 2.2.3-(5) of Section 2 and insert it into adjustment connectors J6 and J16 of the Z10 mother board. (See Fig. 3-21.)

(a) [BIT RATE ; 34368 kb/s
PATTERN ; PRBS 2^{10}-1
FORMAT ; NRZ]

Check the TP ❶ and TP ❷ signal waveforms using the oscilloscope.



V: 500mV/div
H: 50ns/div

Fig. 3-41 TP ❶ Waveform of T-Z3

V: 500mV/div
H: 50ns/div

Fig. 3-42 TP ❷ Waveform of T-Z3

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q76-9, Q77-9, and Q78-9 pin statuses according to the following Table 3-11 by changing the pattern types.

Table 3-11

Pattern \ Status	Q76-9	Q77-9	Q78-9
$2^{10}-1$	L	H	H
$2^{15}-1$	H	L	H
$2^{23}-1$	H	H	L
WORD	H	H	H

(Status: ECL level)

2) Check the output data of the shift resistors Q71, 72, 73, 74, and 75.

After performing the above test, troubleshoot the circuit(s) near the faulty test point.

(b) [BIT RATE ; 34368 kb/s
FORMAT ; NRZ]

Select PATTERN to WORD and set pattern 1001010001110010.

In this case, the WORD-A and WORD-B sequences are shown below.

	1	0	0	1	0	1	0	0	0	1	1	1	0	0	1	0
WORD-A	1		0		0		0		0		1		0		1	
WORD-B		0		1		1		0		1		1		0		0

Then, the TP ❹ and TP ❸ sequences are as follows.

TP ❹	$\overline{\text{WORD-A}}$	0	1	1	1	1	0	1	0	0	1	1	1	1	0	1	0
TP ❸	$\overline{\text{WORD-B}}$	1	0	0	1	0	0	1	1	1	0	0	1	0	0	1	1

Check the TP ❹ and TP ❸ bit sequences using the oscilloscope.

V: 500mV/div
H: 200ns/div

Fig. 3-43 TP ❹ $\overline{\text{WORD-A}}$ of T-Z3

V: 500mV/div
H: 200ns/div

Fig. 3-44 TP ❸ $\overline{\text{WORD-B}}$ of T-Z3

If the above waveforms, are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check whether the Q44-12 and Q44-5 pin statuses are set to the ECL-low level.

2) Check that the Q40 to the Q43 status is listed in the following Table 3-12, corresponding to the set WORD pattern.

Table 3-12

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 (Bit No.)
WORD pattern setting	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16 (Status)
WORD-A Sequence	P1	P3	P5	P7	P9	P11	P13	P15	P1	P3	P5	P7	P9	P11	P13	P15 ...
WORD-B Sequence	P2	P4	P6	P8	P10	P12	P14	P16	P2	P4	P6	P8	P10	P12	P14	P16

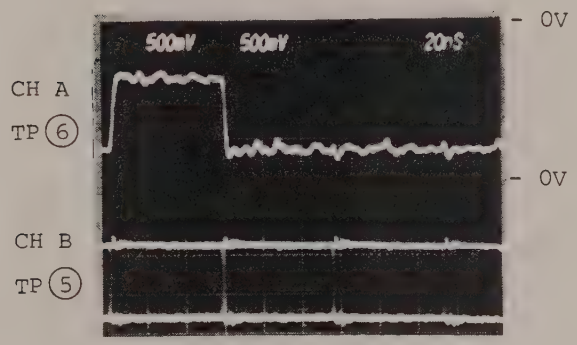
WORD-A	Q, No.	Q23								Q24							
	Pin No.	14	13	12	11	3	4	5	6	14	13	12	11	3	4	5	6
	Status	P1	P3	P5	P7	P9	P11	P13	P15	P1	P3	P5	P7	P9	P11	P13	P15
WORD-B	Q, No.	Q21								Q22							
	Pin No.	14	13	12	11	3	4	5	6	14	13	12	11	3	4	5	6
	Status	P2	P4	P6	P8	P10	P12	P14	P16	P2	P4	P6	P8	P10	P12	P14	P16

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(c)

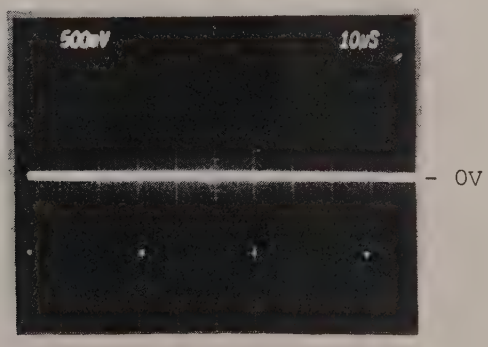
BIT RATE	;	34368 kb/s
ERROR ADD RATE	;	10^{-3}
ERROR ADD MODE	;	BIT
PATTERN	;	PRBS $2^{10}-1$

Check the TP ❺, TP ❻, and TP ⓫ signal waveforms using the oscilloscope.



V: 500mV/div
H: 20ns/div

Fig. 3-45 TP ❺, TP ❻ Waveform of T-Z3



V: 500mV/div
H: 10μs/div

Fig. 3-46 TP ⓫ Waveform of T-Z3

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

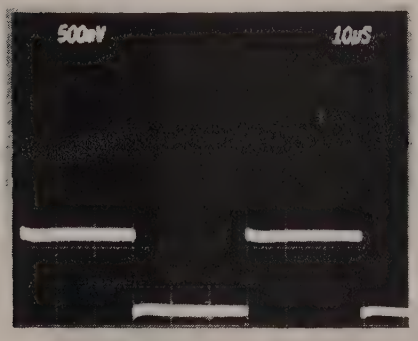
1) Check whether Q68-4 and Q53-5 pin status are set to the ECL-low level.

2) Check the output of the Q47, Q48, and Q49 counter ICs.

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(d) [BIT RATE; 34368 kb/s
PATTERN ; PRBS $2^{10}-1$]

Check the TP ❽ signal waveform using the oscilloscope.



V: 500mV/div
H: 10μs/div

Fig. 3-47 TP ❽ Waveform of T-Z3

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q89 status according to the following Table 3-13 by changing the PRBS pattern.

Table 3-13

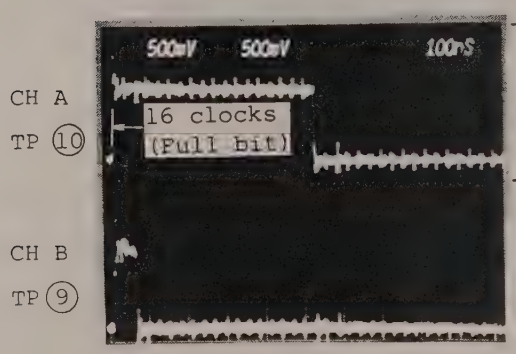
STATUS	Q89 pin No.			
Pattern	12	11	6	5
$2^{10}-1$	H	L	H	L
$2^{15}-1$	H	H	H	L
$2^{23}-1$	H	H	L	H

(Status: ECL level)

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(e) [BIT RATE ; 34368 kb/s
PATTERN ; PRBS $2^{10}-1$
ZERO SUBSTITUTION ; 16]

Check the TP ❾ and TP ❿ signal waveforms using the oscilloscope.



V: 500mV/div
H: 100ns/div

Fig. 3-48 TP ❾ ❿ Waveform of T-Z3

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q92 and Q93 status according to the following Table 3-14 by changing the number of ZERO SUBSTITUTION. (When N is set, set N/2 in the Q92 and A93 in hexadecimal code.)

Table 3-14

STATUS	Q92 Pin No.				P93 Pin No.			
ZERO SUB	12	11	6	5	12	11	6	5
0	L	L	L	L	L	L	L	L
8	L	L	H	L	L	L	L	L
16	L	L	L	H	L	L	L	L
24	L	L	H	H	L	L	L	L
32	L	L	L	L	H	L	L	L
40	L	L	H	L	H	L	L	L
120	L	L	H	H	H	H	L	L

(Status: ECL level)

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(f) Setting is the same as (d).

Check the TP ⑫ and TP ⑬ signal waveforms using the oscilloscope.

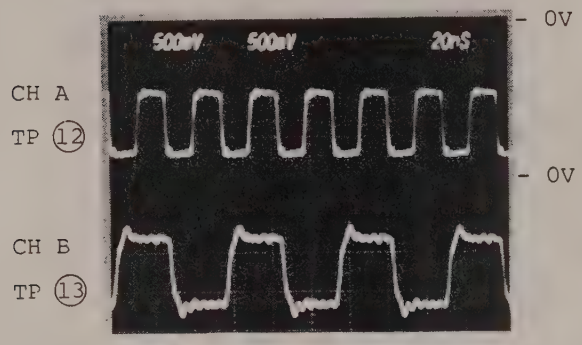


Fig. 3-49 TP ⑫ , TP ⑬ Waveform of T-Z3

If the above waveform is OK, Z3 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

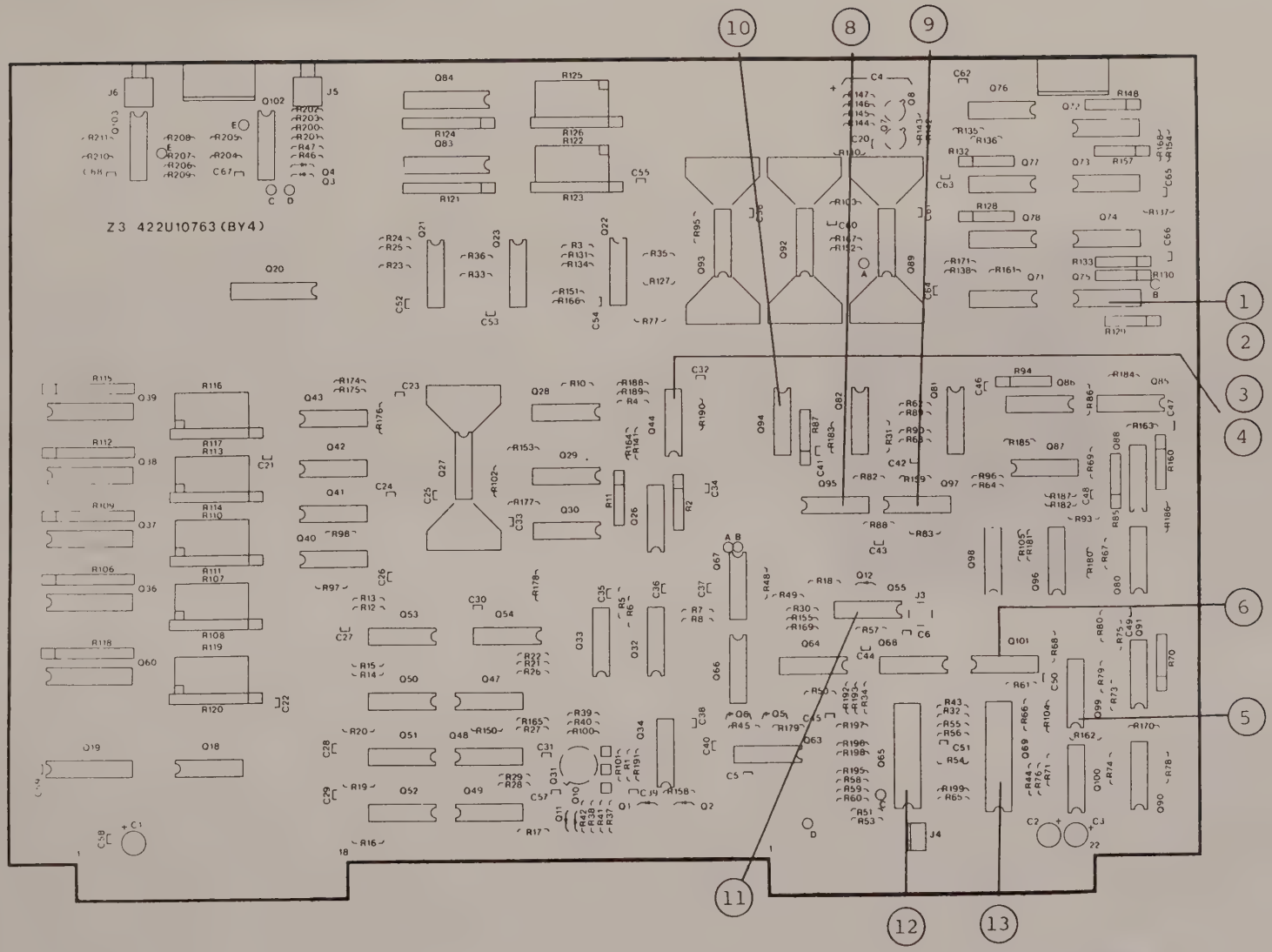


Fig. 3-50 Parts Layout of T-Z3 Pattern Generator P.C. Board 4

43W34328 1/3

REVISIONS

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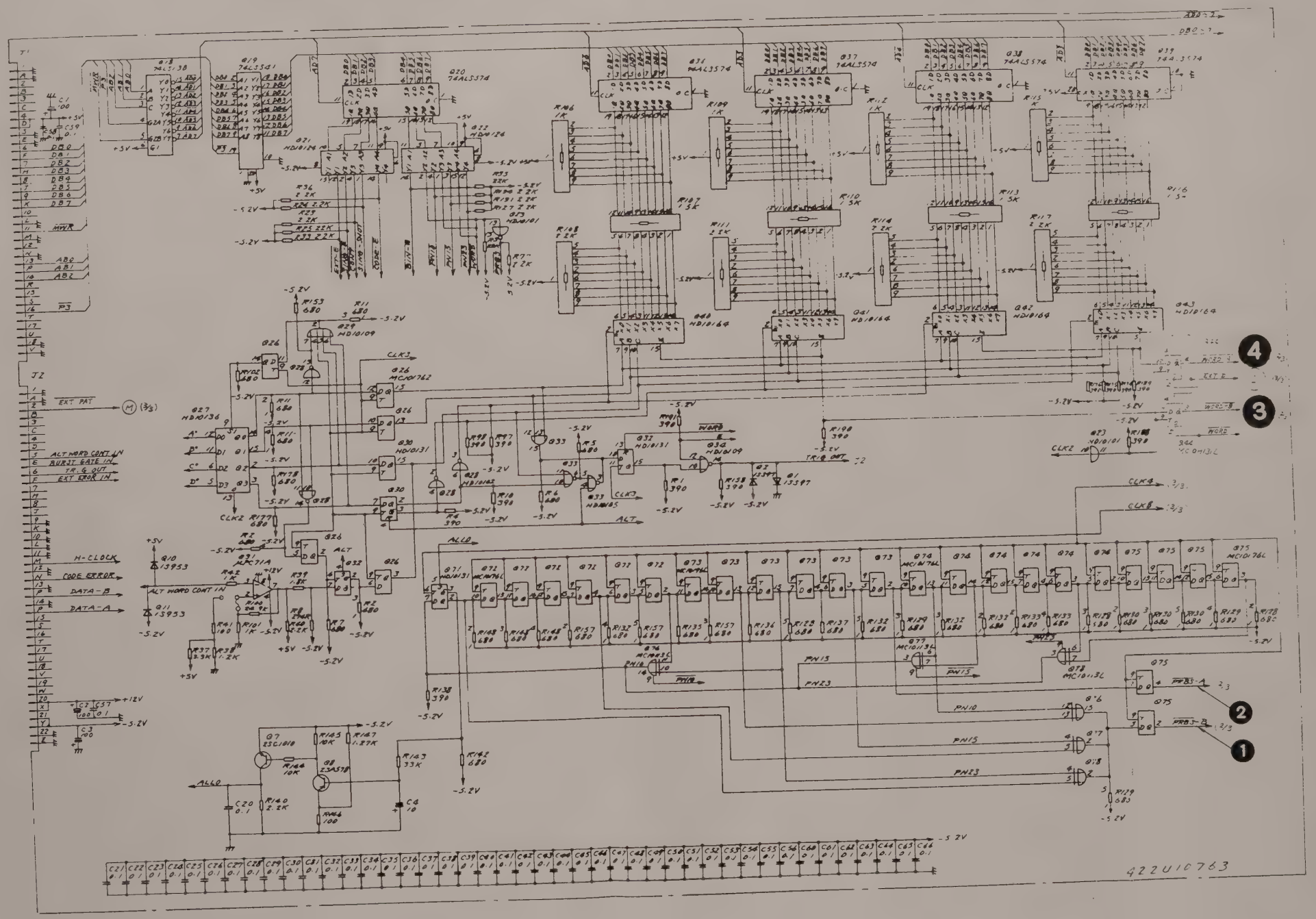

PC Board	422U10763
Parts List	44W84793

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY		TRACED BY		SCALE	4
APPROVED BY		DRAWN BY			

TITLE T-Z3 PATTERN GENERATOR CIRCUIT DIAGRAM

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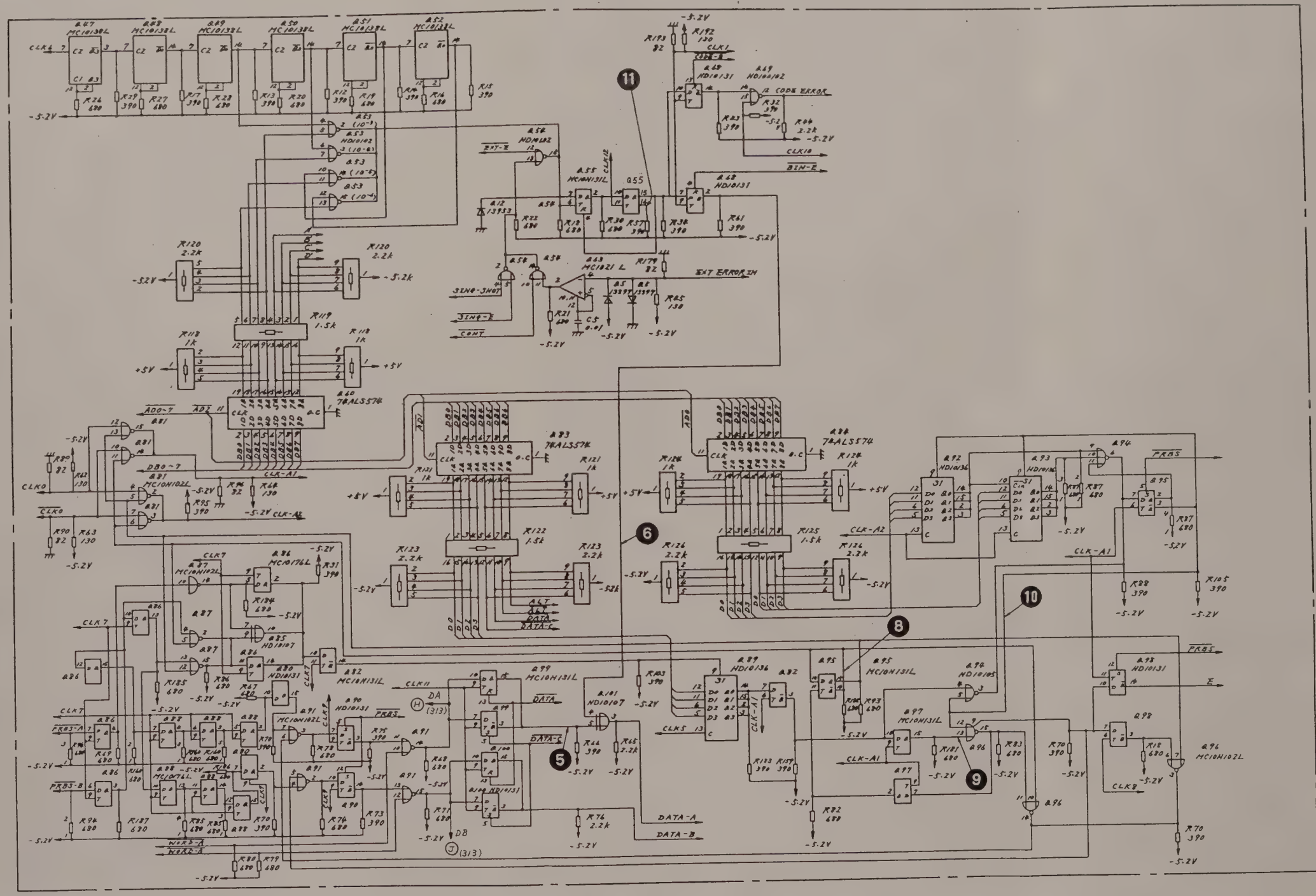

⑦ : not assigned

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY			TRACED BY	SCALE	
APPROVED BY			DRAWN BY	:	

TITLE: T-Z3 PATTERN GENERATOR CIRCUIT DIAGRAM

DRAWING No. 43W34328 2/3

ANRITSU CORP. 3-75/3-76

4

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No. 0021 1985 08

43W34328 3/3

APPLICATION

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OPTION 04 ONLY

J10

-5.2V

R200 82

R201 130

Q102 MC10H105L

J5 (Z2)

Q102

R205 82

Q102

ℓ = 4.0cm

Q103

Q103

Q103 HC10H102L

J6 (Z5)

J7 (Z8)

R202 82

R203 130

R204 130

R206 130

R207 82

R208 390

R210 390

R211 390

Q66 HD10110

CLK10
CLK1
CLK11
CLK7
CLK3
CLK6
CLK2
CLK5
CLK4
CLK12
CLK9
CLK8

R48 82

R49 130

Q67 HD10110

EXT D (L)

OPTION 04 ONLY

R59 180

R60 110

R199 390

Q64 HD10231

Q69 HD100102

R56 10

R55 390

CLK0

CLK0

H-CLOCK

13

HCLK (F)

OPTION 04 ONLY

R58 680

Q65 HD100102

12

F-CLOCK(-)

J4

R195 390

R196 390

R197 390

R53 82

R51 130

R198 10

J11

J8

R212 82

R213 130

Q104 MC10H102L

DA (M) (2/3)

EXT D (K) (V3)

(1/3) (M) EXT PAT

R214 1.5K

Q104

R215 2.2K

R216 2.2K

EXT D (L)

Q104

DB (J) (3/3)

J9

R217 82

R218 130

OPTION 04 ONLY

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

TITLE: T-Z3 PATTERN GENERATOR CIRCUIT DIAGRAM

DRAWING No. 43W34328 3/3

4

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ANRITSU CORP.

3-7713-78

No. 0023-1985.08

3.5.5 T-Z5 OUTPUT 5 P.C. Board and T-Z8 CMI SHAPER 5

(1) Circuit Description

Half-clock data A and data B input from the Z3 PATTERN GENERATOR circuit are stacked as full-clock data by the multiplexer.

On CMI, the full-clock data is converted into the CMI format by the CMI coder and is output through the changeover switch and output amplifier.

On AMI/HDB3, the data is converted into each format by the bipolar coder and is shifted every four bits, and then output through the output amplifier.

On NRZ/RZ unipolar output, the half-clock data A and data B are stacked after shifting every 2 bits. And then it is output through the changeover switch and the output amplifier.

The amplitude of the bipolar output, and the offset and amplitude of the unipolar output are set by each output amplifier.

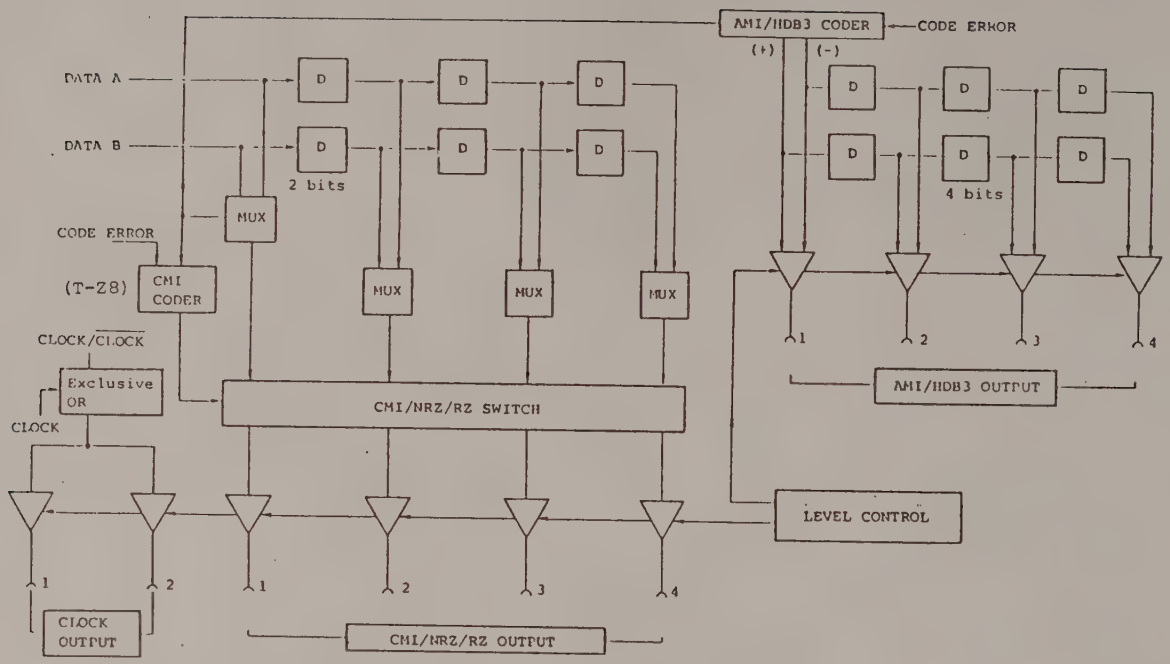


Fig. 3-51 T-Z5 OUTPUT and T-Z8 CMI SHAPER Block Diagram

(a) AMI (alternate mark inversion) A bipolar signal in which the polarity changes each time a binary "1" appears (See ⓓ in Fig. 3-52)

(b) HDB3 (high density bipolar with three zero substitution) A bipolar code. It is the same as AMI when the number of consecutive "0" bits is three or less; and a block is replaced by a special code pattern B00V or 000V when the number of consecutive "0" bits is four or more. B indicates the insertion of a "1" signal as in the bipolar rules, and V an insertion of a "1" signal in violation of the bipolar signal.

The code pattern B00V is selected when the polarity of the previously inserted V signal and that of the last "1" signal are the same, and 00V is selected when they are opposite. (See ⓔ in Fig. 3-52)

(c) CMI (Coded Mark Inversion)

A unipolar signal that converts binary "0" to 01 and binary "1" to 1 or 0, so that they will change alternately (See ⓒ in Fig. 3-52)

(d) NRZ (non-return to zero) and RZ (return to zero) Two types of unipolar codes. Logical "1" and logical "0" unipolar signals correspond respectively to level 1 and level 0 within one bit in the NRZ code; and the signal level always returns to zero within one bit in the RZ code. (See ⓐ and ⓑ in Fig. 3-52)

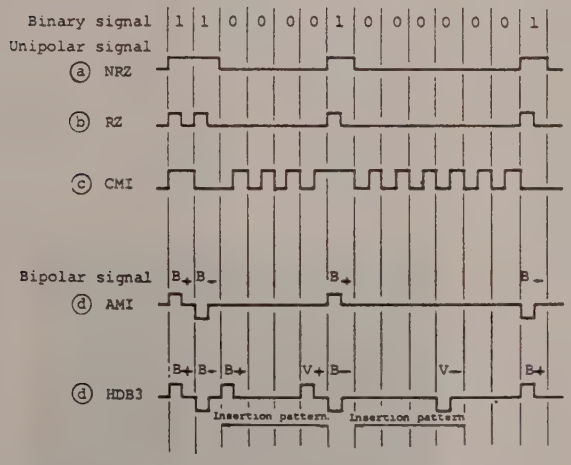
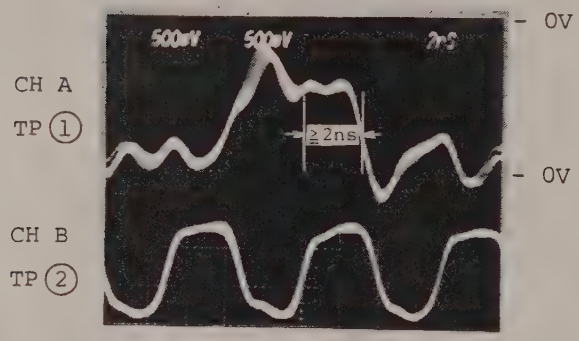


Fig. 3-52 PCM Transmission Codes

(2) Troubleshooting and adjustment

(a)
BIT RATE	;	139164 (kb/s)
FORMAT	;	CMI
ERROR ADD RATE	;	10^{-3}
ERROR ADD MODE	;	CODE

Check the TP ❶ and TP ❷ signal waveform using the oscilloscope.



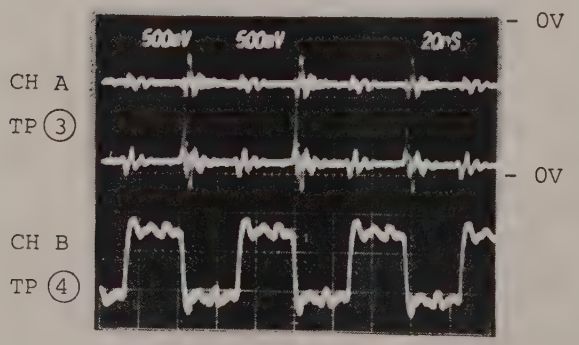
V: 500mV/div
H: 2ns/div

Fig. 3-53 TP ❶, TP ❷ Waveform of T-Z5

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

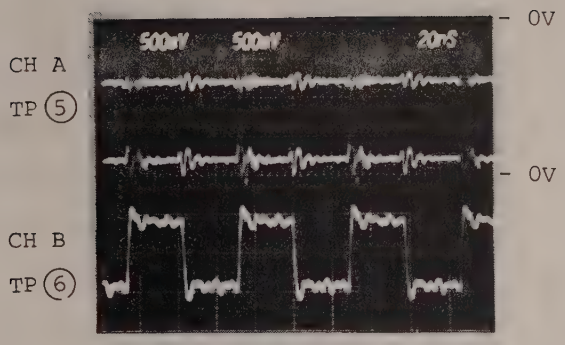
(b) BIT RATE ; 34368 (kb/s)
FORMAT ; CMI

Check the TP ❸ ❹, TP ❺ ❻ signal waveforms using the oscilloscope.



V: 500mV/div
H: 20ns/div

Fig. 3-54 TP ❸, TP ❹ Waveform of T-Z5



V: 500mV/div
H: 20ns/div

Fig. 3-55 TP ❺, TP ❻ Waveform of T-Z5

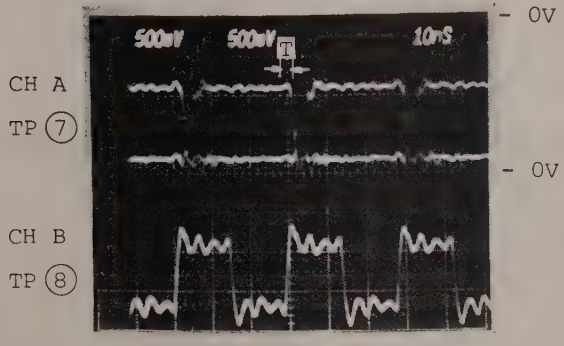
If the above waveforms are OK, proceed to the next step without performing the following test.

1) Check the whether the phase between the TP ❹ and TP ❸ waveform negative edges are almost matched. If not, check the Q12 and Q17 output signals.

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(c) Setting is the same as (b).

Check the TP ❼ and TP ❽ signal waveforms using the oscilloscope.



V: 500mV/div
H: 10ns/div

Fig. 3-56 TP ❼, TP ❽ Waveform of T-Z5

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

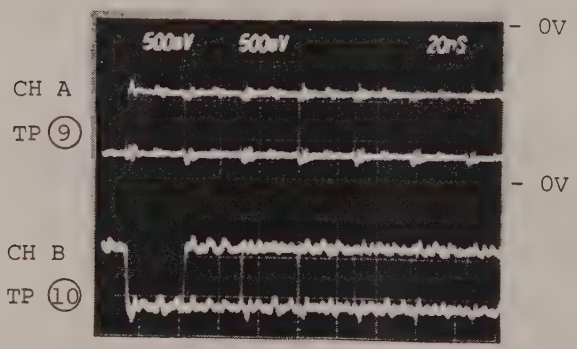
1) Check whether the phase difference T between TP ❼ and TP ❽ is approximately 2 ns.

   If not, adjust the Z4 cable length.

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(d) Setting is the same as (b)

Check the TP ❾ and TP ❿ signal waveforms using the oscilloscope.



V: 500mV/div
H: 20ns/div

Fig. 3-57 TP ❾, TP ❿ Waveform of T-Z5

(e) [BIT RATE ; 34368 (kb/s)
FORMAT ; RZ]

Check the TP ⓫ and TP ⓬ signal waveforms using the oscilloscope.

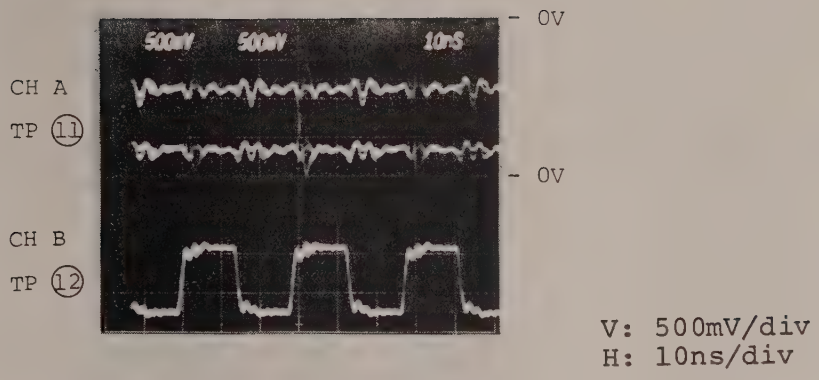


Fig. 3-58 TP ⓫ , TP ⓬ Waveform of T-Z5

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check whether the phase between the TP ⓬ and TP ⓫ waveform positive edges are almost matched.

   If not, adjust the Z3 cable length.

After performing the above test, troubleshoot the circuit(s) near the faulty test point.

(f) [BIT RATE ; 139264 (kb/s)
FORMAT ; CMI]

Check the signal waveforms of the Q8-20 pin (A) and the Q8-23 pin (B) using the oscilloscope.

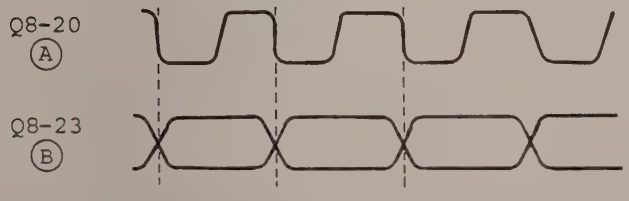


Fig. 3-59 Q8-20, Q8-23 Waveform of T-Z5

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the whether the phase between the Ⓐ and Ⓑ signal negative edges are almost matched.

   If not, adjust the Z1 cable length.

If not OK alter performing the above test, perform the following adjustment.

1) R123, R130, R131, R132 Adjustment

   i) R123 adjustment

      Adjust R123 for 50% duty by observing the clock signal of the Q9-4 pin using the oscilloscope.

   ii) R130 adjustment

      Set FORMAT RZ. Adjust the R130 for 50% duty by observing the CMI/NRZ/RZ output signal of the ME520B(T) using the oscilloscope.

   iii) R131 adjustment

      Adjust the R131 for 50% duty by observing the ME520B(T) clock output signal using the oscilloscope.

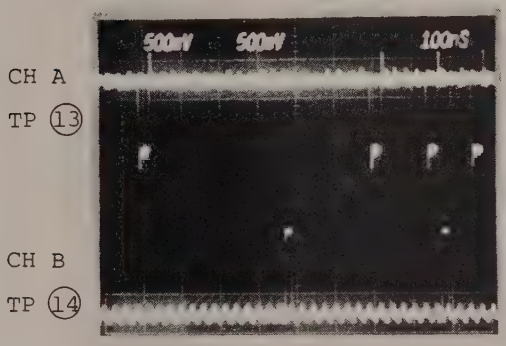
   iv) R132 adjustment

      Set FORMAT CMI. Adjust the R132 for 50% duty by observing the CMI/NRZ/RZ output signal of the ME520B(T) using the oscilloscope.

If not OK performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

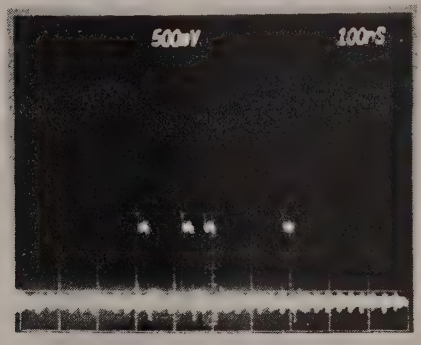
(g) [BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3
PATTERN ; PRBS $2^{10}-1$]

Check the TP ⑬ to TP ⑳ waveforms using the oscilloscope.



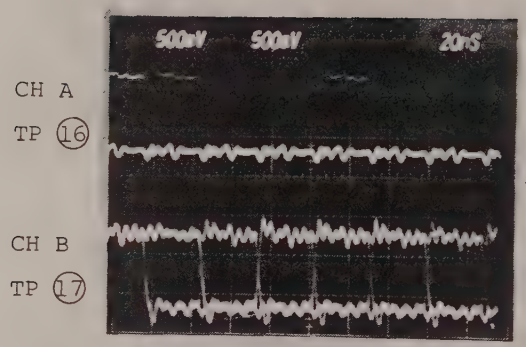
V: 500mV/div
H: 100ns/div

Fig. 3-60 TP ⑬ , TP ⑭ Waveform of T-Z5



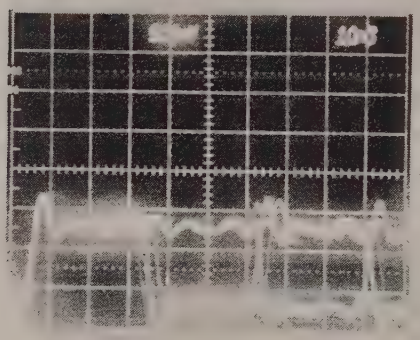
V: 500mV/div
H: 100ns/div

Fig. 3-61 TP ⑮ Waveform of T-Z5



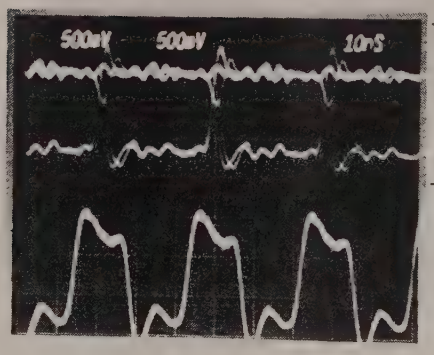
V: 500mV/div
H: 20ns/div

Fig. 3-62 TP ⑯ , TP ⑰ Waveform of T-Z5



V: 500mV/div
H: 10ns/div

Fig. 3-63 TP ⑱ Waveform of T-Z5



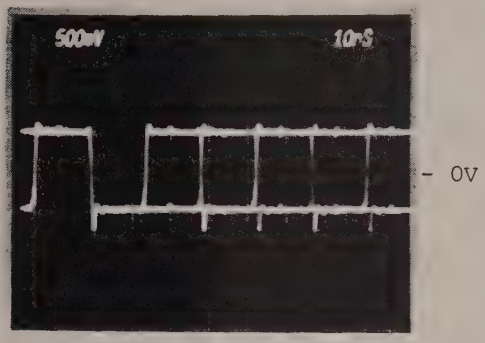
V: 500mV/div
H: 10ns/div

Fig. 3-64 TP ⑲ , TP ⑳ Waveform of T-Z5

If the above waveforms are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(h) [BIT RATE ; 34368 (kb/s)
FORMAT ; CMI
PATTERN ; PRBS, $2^{10}-1$]

Check the TP ㉔ waveform using the oscilloscope.



V: 500mV/div
H: 10ns/div

Fig. 3-65 TP ㉔ Waveform of T-Z5

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(i) [BIT RATE ; 139264 (kb/s)
FORMAT ; NRZ]

Check the voltage of TP ㉒, ㉓, ㉕, ㉖, ㉗, and ㉘ according to the following Table 3-15 (typical) by changing the NRZ/RZ output level to TTL, ECL, and SET.

Table 3-15

NRZ/RZ OUTPUT LEVEL	TP NO. ㉘	㉖	㉗	㉓	㉕	㉒
TTL	+0.5	+2.4	-1.8	+4.8	-0.9	-1.8
ECL	+0.25	-0.2	-3.0	+0.35	-2.2	-3.0
OFFSET		+2.8 to -1.5	+0.6 to -3.6	+4.8 to -3.0	+1.2 to -2.4	+0.3 to -3.7
AMPLITUDE	+0.2 to +0.5	Set the minimum status				

(Unit: V)

If the above values are OK, proceed to the next step without performing the following test. If not OK, perform the following adjustment.

1) R213, R237, R280, R322, R332 Adjustment

[BIT RATE ; 139264 (kb/s)
FORMAT ; CMI]

i) R213 adjustment

Adjust the R213 for $1V_{p-p}$ amplitude by observing the CMI/NRZ/RZ output 1 waveform using the oscilloscope.

ii) R237 adjustment

Adjust the R237 for $1V_{p-p}$ amplitude by observing the CMI/NRZ/RZ output 2 waveform using the oscilloscope.

iii) R280 adjustment

Adjust the R280 for 1 V_{p-p} amplitude by observing the CMI/NRZ/RZ output 3 waveform using the oscilloscope.

iv) R322 adjustment

Adjust the R322 for 1 V_{p-p} amplitude by observing the CMI/NRZ/RZ output 4 waveform using the oscilloscope.

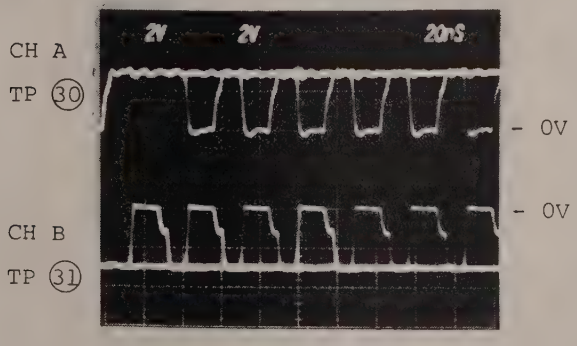
v) R332 adjustment

Adjust the R332 for +2.00 V of the Q94-1 pin.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(j)
BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3
PATTERN ; PRBS, $2^{10}-1$
OUTPUT LEVEL ; 2.37 V

Check the TP ㉚ and TP ㉛ signal waveforms using the oscilloscope.



V: 2V/div
H: 20ns/div

Fig. 3-66 TP ㉚ , TP ㉛ Waveform of T-Z5

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(k) [The setting is the same as (j).]

Check voltage of TP ㉙ , ㉜ , and ㉝ according to the following Table 3-16 (typical) by changing the output level to 2.37 V and 1 V.

Table 3-16

OUTPUT LEVEL	TP NO. ㉝	㉙	㉜
2.37 V	-0.1	+8.0	-8.0
1 V	-0.1	+5.0	-5.6

(Unit: V)

If the above values are OK, proceed to the next step without performing the following test. If not OK, perform the following adjustment.

1) R349, R350, R394, R355, R432, R461, R462 R493 Adjustment

[BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3
PATTERN ; PRBS, $2^{10}-1$
OUTPUT LEVEL ; 1 V]

i) Adjust the R349 for 1.0 V plus side amplitude by observing the AMI/HDB3 output 1 waveform using the oscilloscope. Then, adjust the R350 for 1.0V minus side amplitude in the same way.

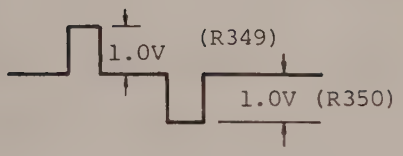


Fig. 3-63

ii) As the same way as above, adjust the amplitude according to the following Table 3-17 by observing waveforms of AMI/HDB3 outputs 2 to 4 using the oscilloscope.

Table 3-17

AMI/HDB3 OUTPUT		Adjustable R
2	+	R394
	-	R355
3	+	R432
	-	R461
4	+	R462
	-	R493

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(l) [BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3
CLOCK LEVEL ; TTL]

Check the TP ㊲ , TP ㊵ signal waveforms using the oscilloscope.

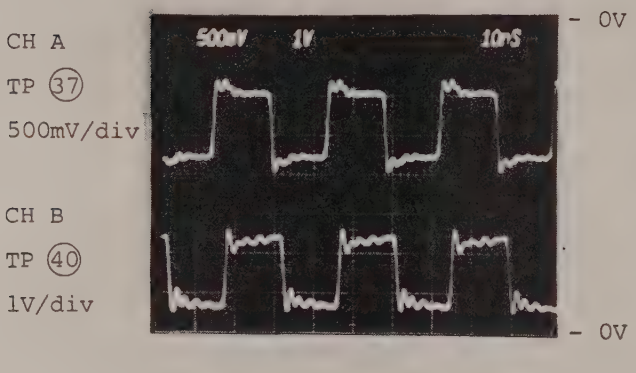


Fig. 3-67 TP ㊲ , TP ㊵ Waveform of T-Z5

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(m) [BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3]

Check the voltage of the TPs ㉞ , ㉟ , ㊱ , ㊴ , ㊶ , and ㊷ , according to the following Table 3-18 (typical) by changing the clock output level to TTL, ECL, and SET.

Table 3-18

CLOCK OUTPUT LEVEL	TP No. ㉞	㊱	㊷	㉟	㊶	㊴
TTL	+0.5	+2.4	+4.8	-1.7	-0.9	-1.8
ECL	+0.25	+0.2	+0.3	-3.0	-2.2	-3.0
OFFSET		-1.5 to +2.8	-3 to +4.8	-3.0 to +0.3	-2.4 to +1.1	-3.6 to +0.3
AMPLITUDE	+0.25 to +0.5	Set the minimum status				

(Unit: V)

If the above values are OK, Z5 is OK. If not OK, perform the following adjustment.

1) R543, R574 Adjustment

BIT RATE	; 34368 (kb/s)
FORMAT	; HDB3
CLOCK OUTPUT LEVEL	; ECL

i) R543 adjustment

Adjust the R543 for 1.0 V_{p-p} amplitude by observing the CLOCK OUTPUT 1 waveform using the oscilloscope.

ii) R574 adjustment

Adjust the R574 for 1.0 V_{p-p} amplitude by observing the CLOCK OUTPUT 2 waveform using the oscilloscope.

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

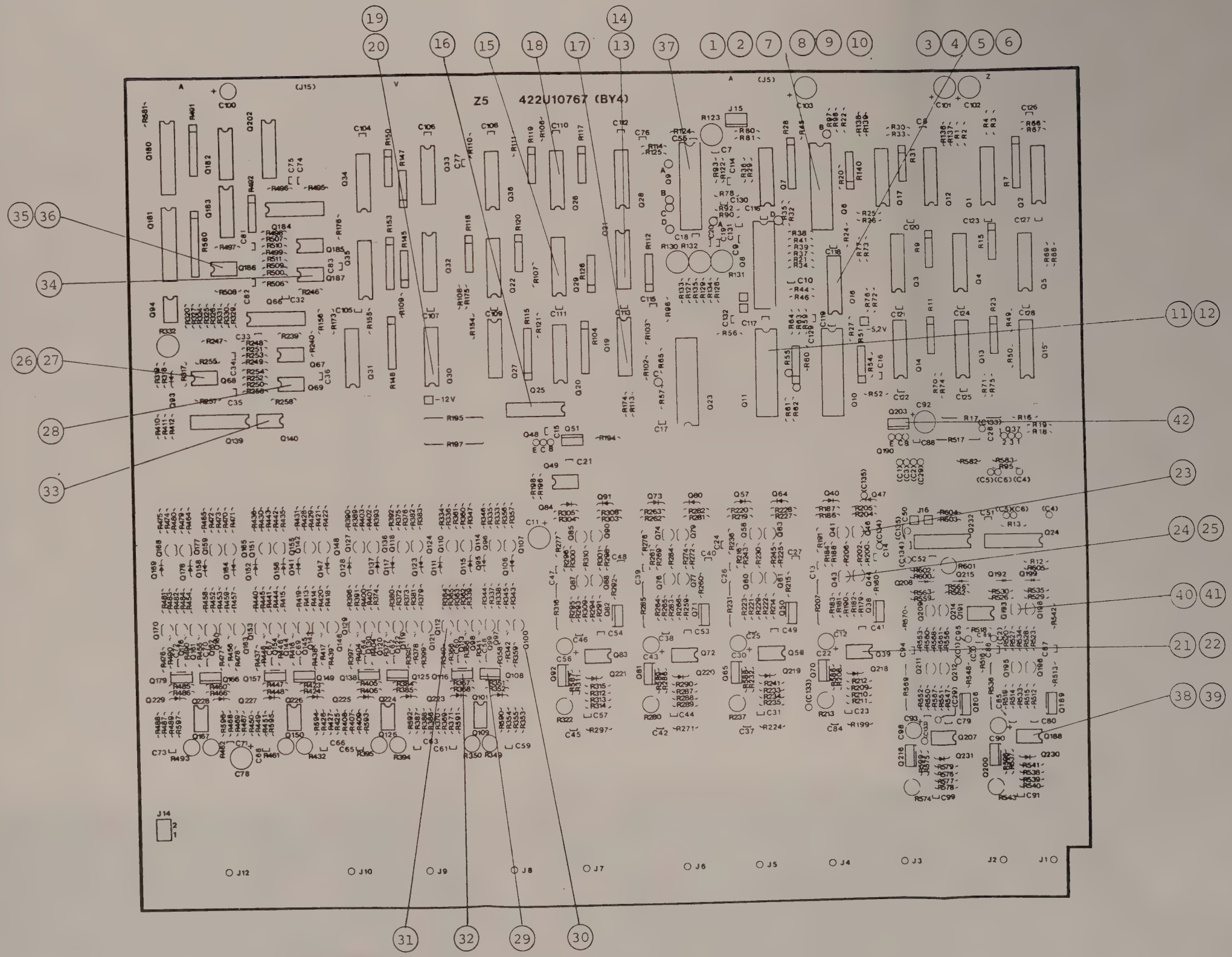


Fig. 3-68 (1/2) Parts Layout of T-Z5 OUTPUT AMP P.C. Board 5

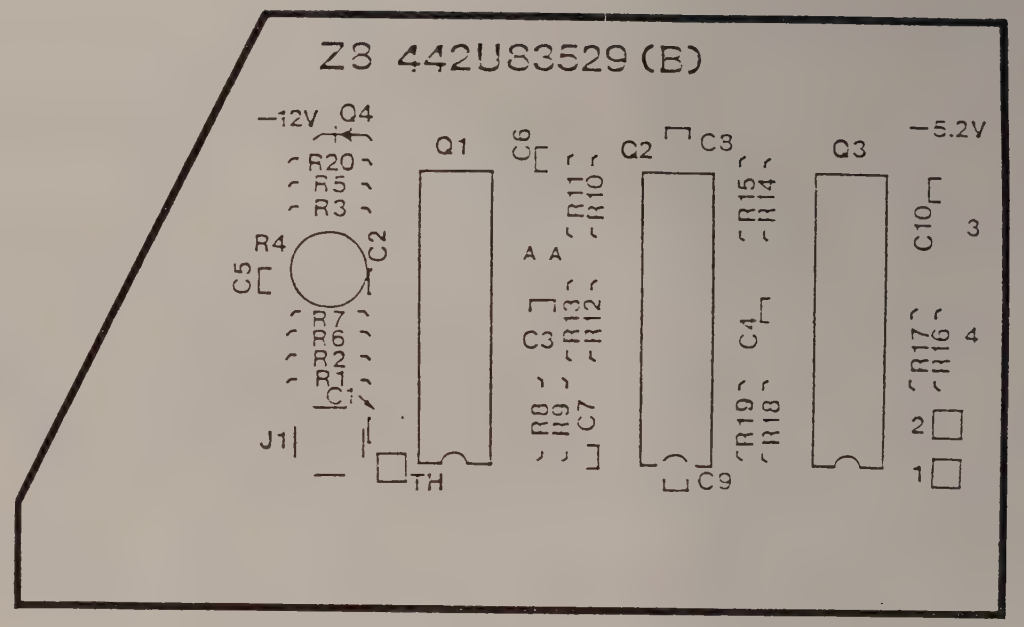


Fig. 3-68 (2/2) Parts Layout of
T-Z8 CMI SHAPER P.C. Board 5

43W34329 5/6

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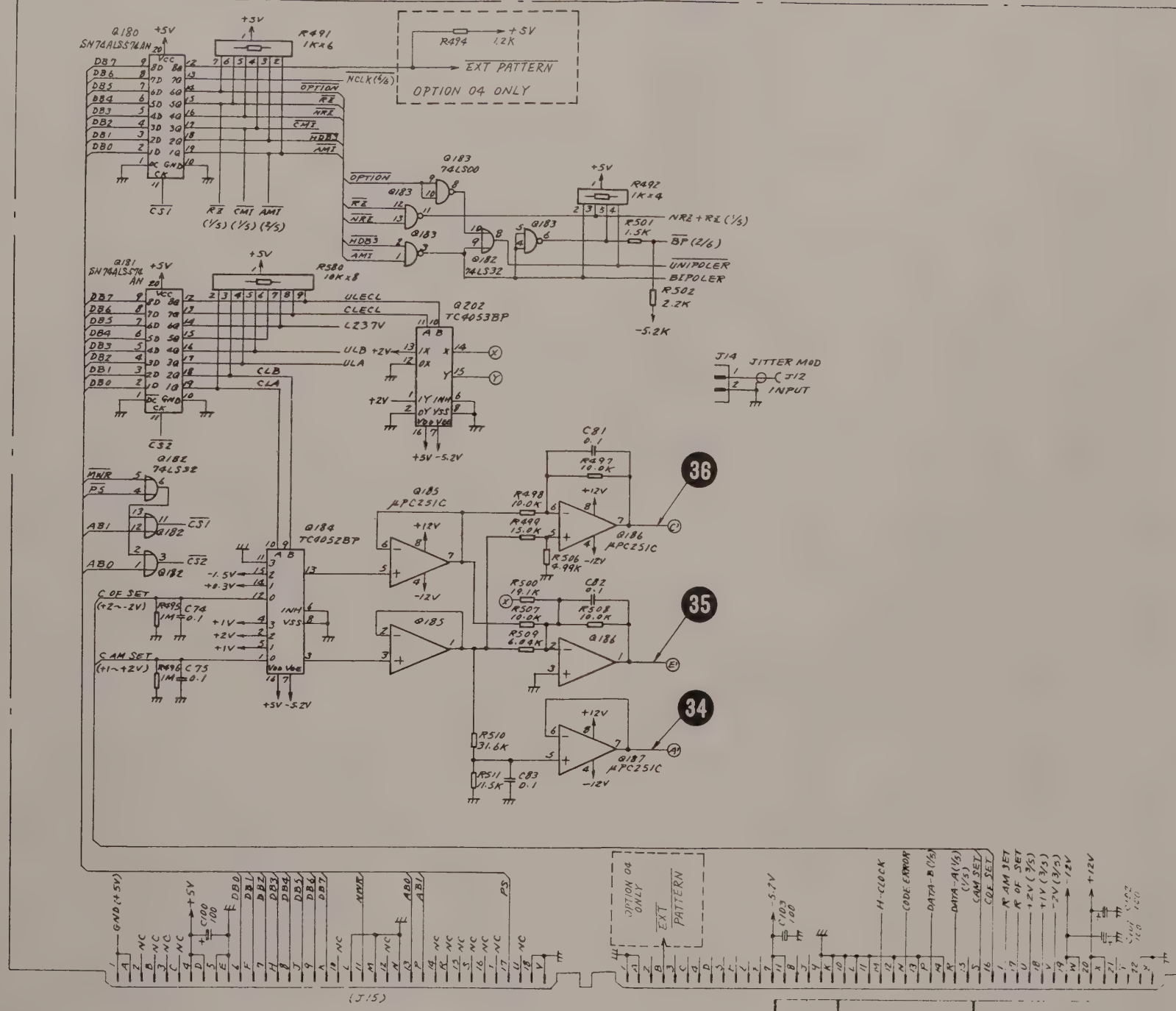

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	5
APPROVED BY	DRAWN BY		

TITLE: T-Z5 OUTPUT CIRCUIT DIAGRAM

DRAWING No. 43W34329 5/6

DEP

No. D023-1985.08

ANRITSU CORP

APPLICATION

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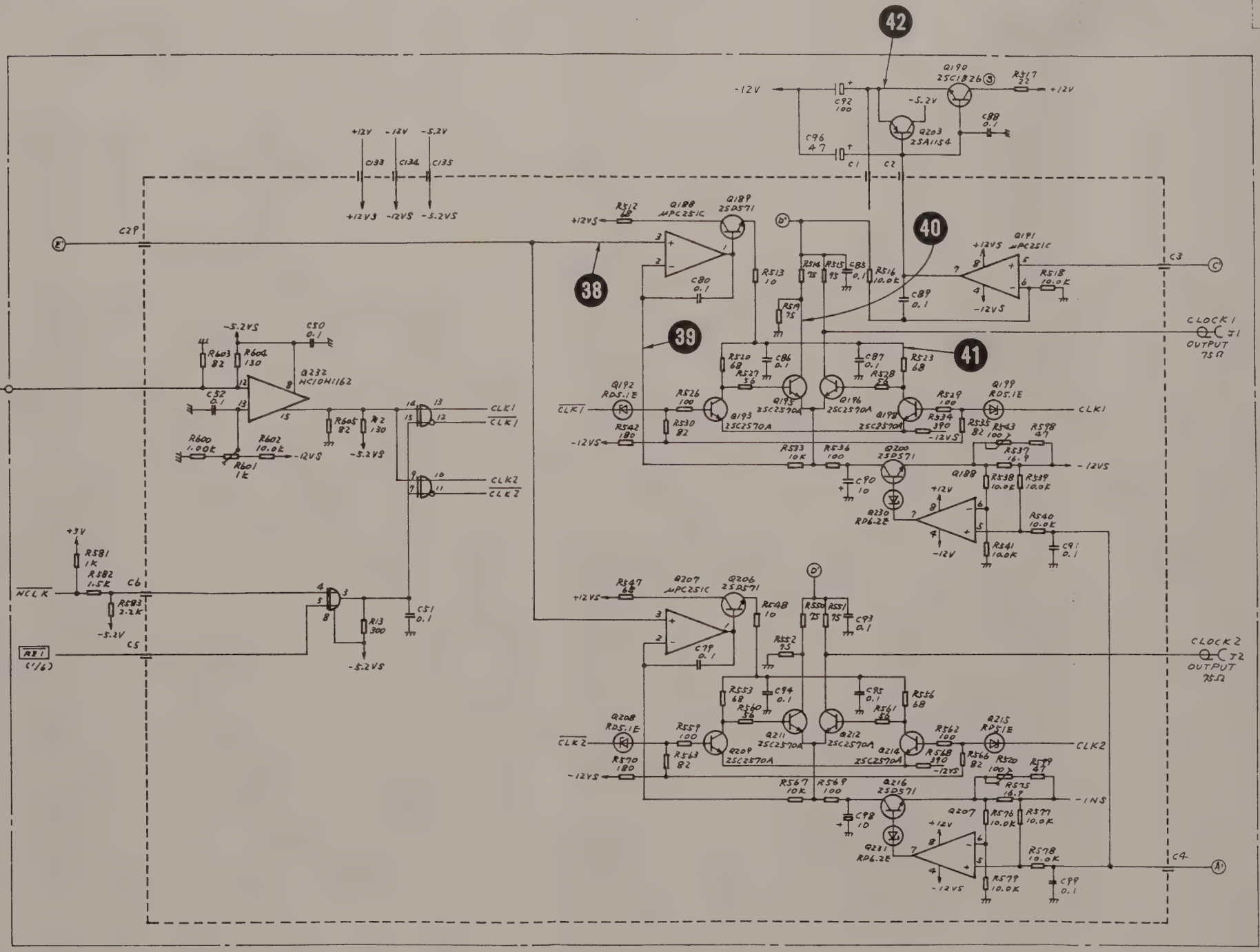

Note:

(37) is in 1/6.

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY		TRACED BY		SCALE	
APPROVED BY		DRAWN BY			

TITLE: T-Z5 OUTPUT CIRCUIT DIAGRAM

DRAWING No. 43W34329 6/6

5

DEP

ANRITSU CORP.

43W34332 1/1

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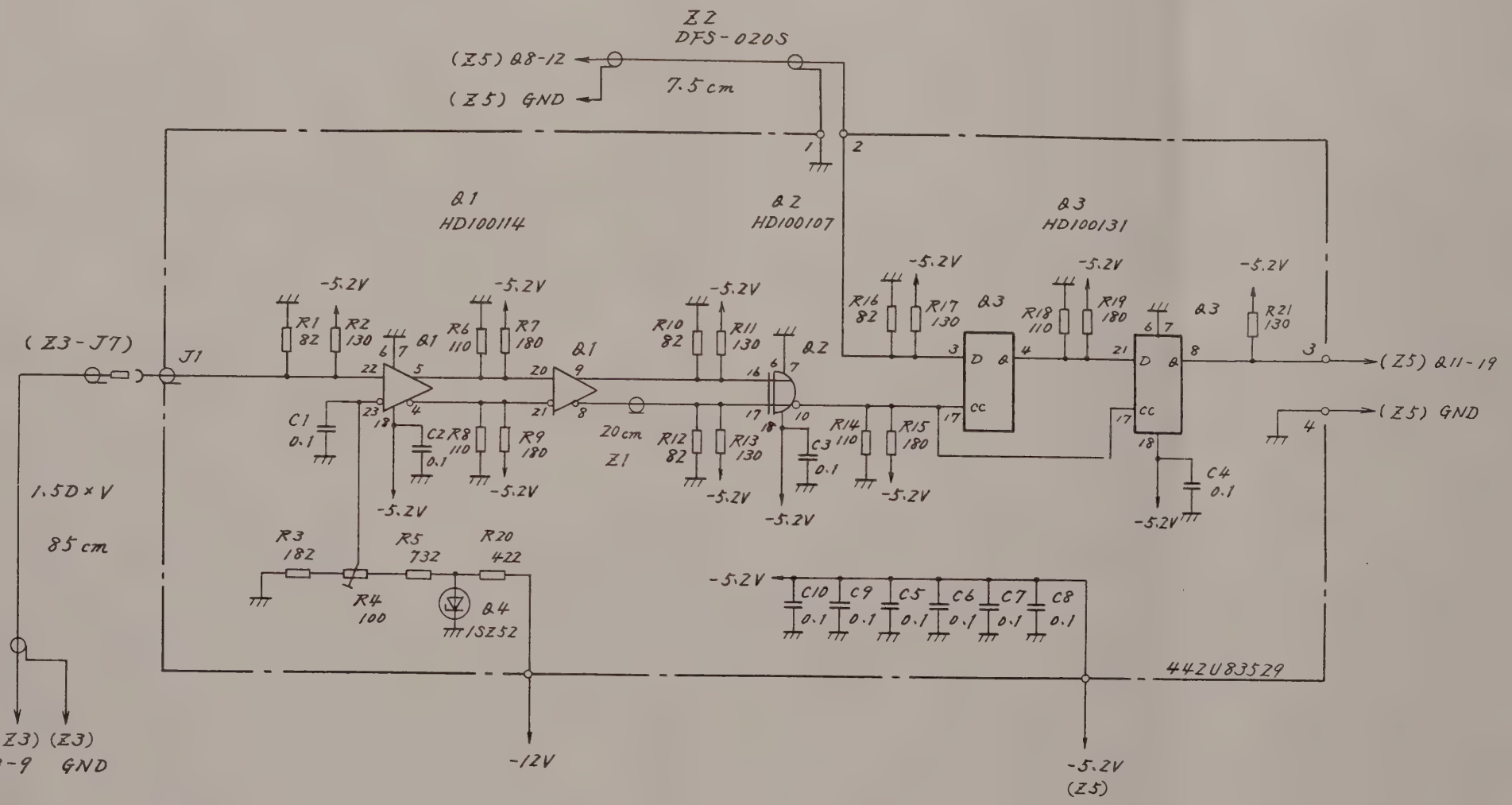

Pc Board	442U83529
Parts List	44W84797

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

5

TITLE: T-Z8 CMI SHAPER CIRCUIT DIAGRAM

DRAWING No: 43W34332 1/1

DEP

ANRITSU CORP.

3-111/3-112

No. 0023-1985 08

3.5.6 T-Z6 DISPLAY 6, T-Z9 GP-IB INTERFACE 8, and T-Z10 MOTHERBOARD 9 P.C. boards

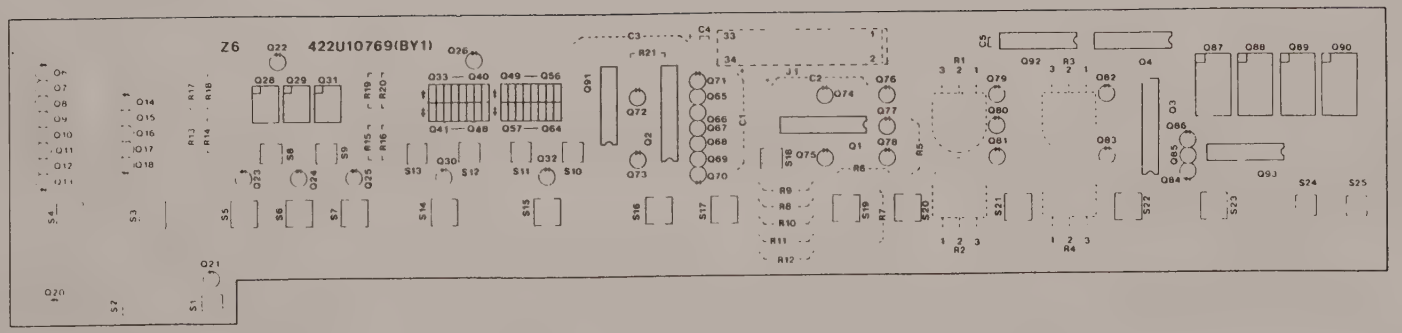

Fig. 3-69 Parts Layout of T-Z6 DISPLAY P.C. Board 6

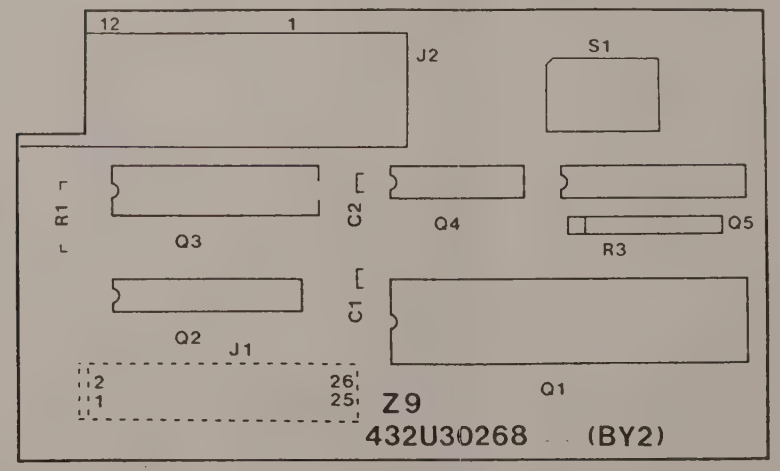

Fig. 3-70 Parts Layout of T-Z9 GP-IB INTERFACE P.C. Board 8

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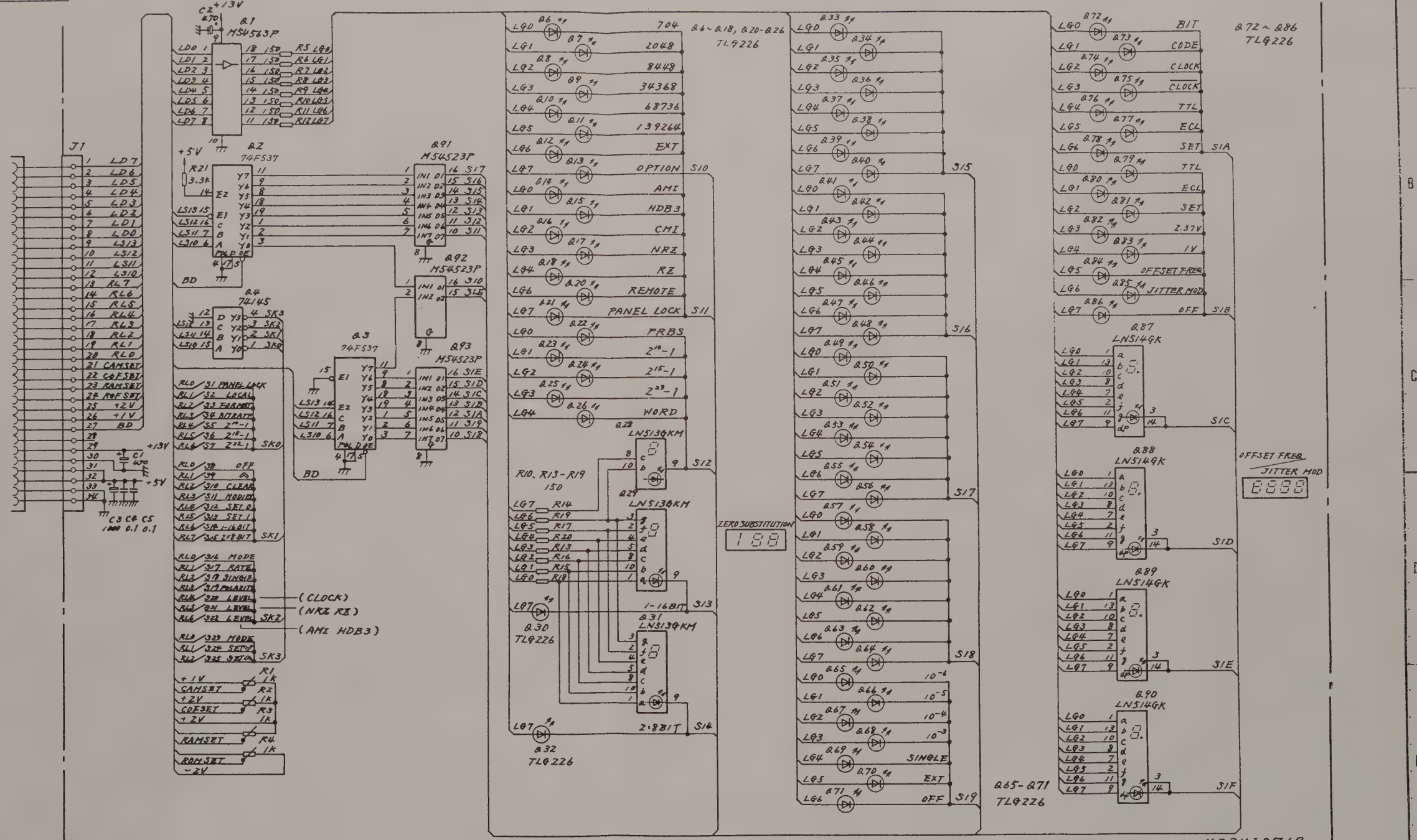

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	M-1
APPROVED BY	DRAWN BY	:	

6

TITLE: T-Z6 DISPLAY CIRCUIT DIAGRAM

DRAWING No. 43W34330 1/1

PC Board	422U10769
Parts List	44W84795

DEP

No. 0023-1985.08

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3-115

43 W 34333 1/1

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J1

J2

Q1 μPD7210C

Q2 SN75160 BN

Q3 SN75162BN

Q4 74LS32

Q5 74LS540

S1 DIP-A(6)

R1 10K

R3 10KΩ

C1 C2 0.1 0.1

+5V

CSA5 IR3 RESET Ø MWR MRD A0 A1 A2 A4 A5

D0 D1 D2 D3 D4 D5 D6 D7

INT RESET CLK (4M) WR RD RS0 RS1 RS2 CS

DIO8 DIO7 DIO6 DIO5 DIO4 DIO3 DIO2 DIO1

PE TE T/R1

SRQ ATN EOI DAV NRFD NDAC IFC REN DC SC

CSA56 CSA55

PC Board	432U30268
Parts List	44 W84798

432U30268

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE M-1

APPROVED BY | DRAWN BY

TITLE T-Z9 GP-IB CIRCUIT DIAGRAM

DRAWING No. 43 W34333 1/1

8

DEP

No. 0023-1985.08

ANRITSU CORP.

3-117

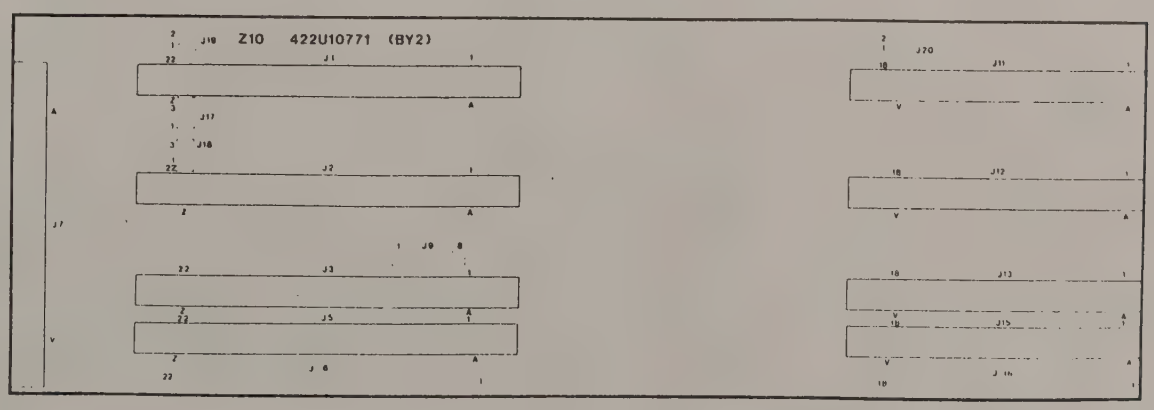


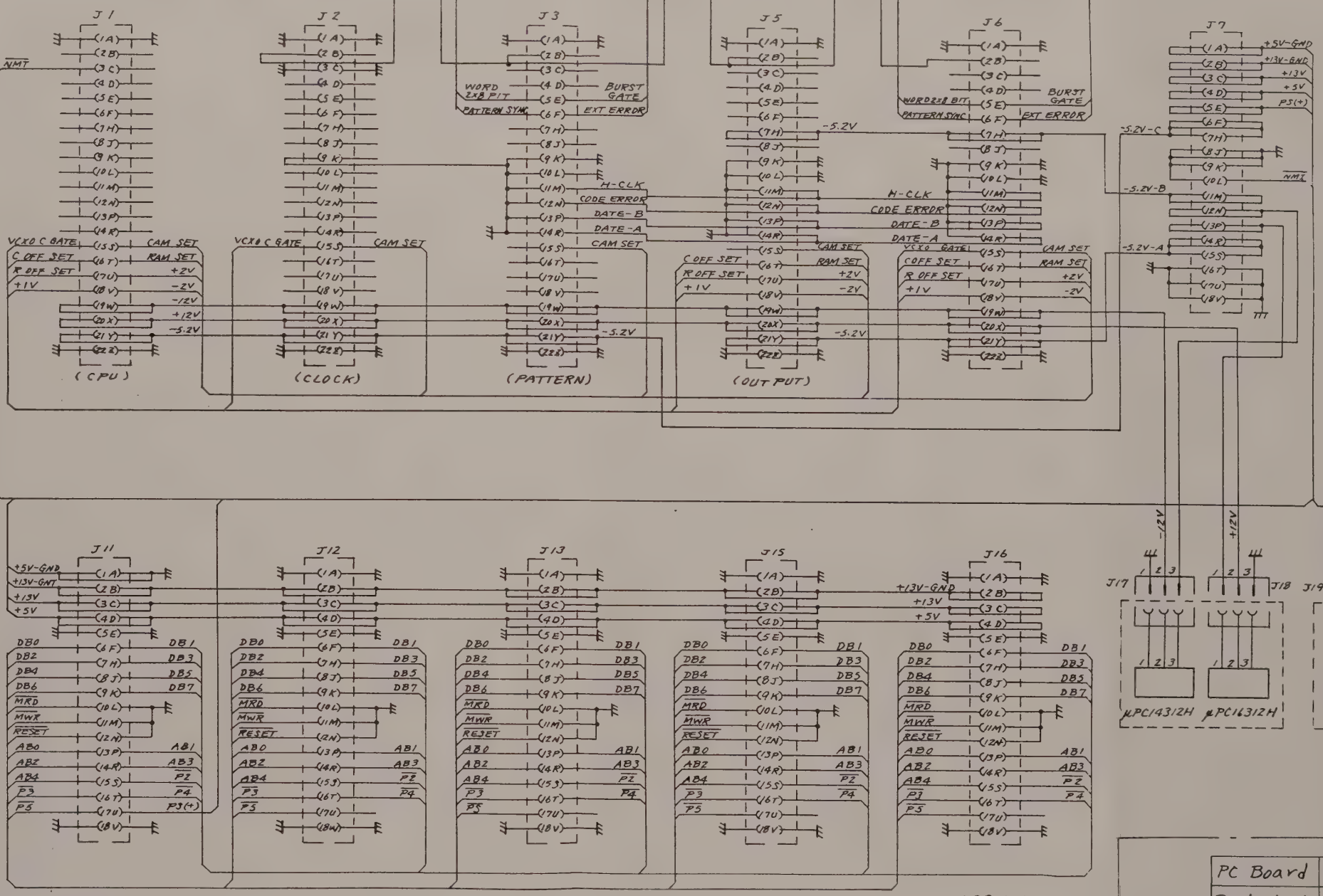
Fig. 3-71 Parts Layout of T-Z10 MOTHER BOARD P.C. Board

43W34334 1/1

APPLICATION

REVISIONS

OPTION 04 ONLY



422U10771

PC Board	422U10771
Parts List	44W84799

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	9
APPROVED BY	DRAWN BY	:	

TITLE T-Z10 MOTHERBOARD CIRCUIT DIAGRAM

DRAWING No. 43W34334 1/1

DEP

No. 0023-1985.08

ANRITSU CORP.

3-119/3-120

3.6 Receiver Troubleshooting and Adjustment

An explanation of the ME520B receiver (R) circuit is given below using the simplified block diagram of the receiver shown in Fig. 3-72.

The received input data is amplified and waveform-shaped by the Z4 INPUT circuit and is decoded as NRZ data by the Z5 (CMI) and Z6 (AMI/HDB3) decoder circuits. Subsequently, errors are detected in Z7 (REGENERATOR) and Z8 (WORD) error detector circuits.

On the other hand, the clock signals are regenerated by the clock recovery circuit. The input jitter contents are changed to the jitter of recovered clock signal, detected, and then converted to digital data by A/D conversion.

The detected errors and jitter are counted by the Z11 COUNTER circuit and are calculated or processed by the Z12 CPU circuit.

The CPU circuit also controls all circuits, except for the Z16 POWER SUPPLY circuit, in the state preset at the front panel and displays the state and processing results on the Z14 DISPLAY.

In addition, the CPU circuit exchanges data externally and controls the GP-IB through the Z15 GP-IB circuit.

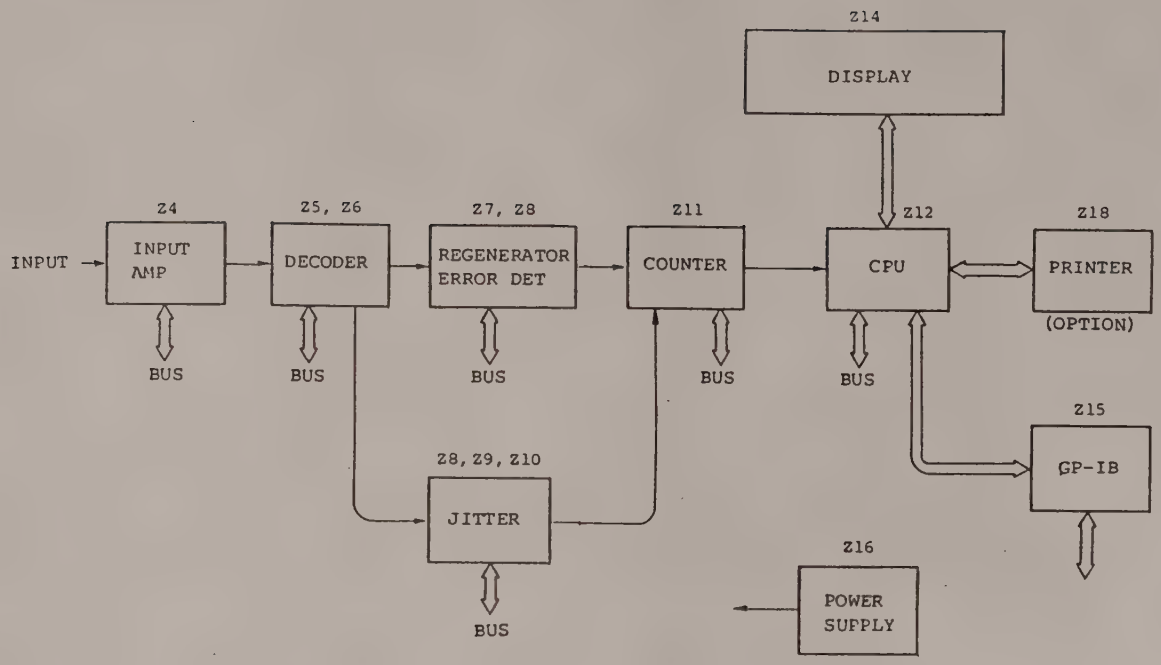


Fig. 3-72 Simplified Block Diagram of Receiver

The functions of the main P.C. boards in the receiver are briefly described below.

For details, see paragraphs 3.6.1 to 3.6.8.

(1) R-Z4 INPUT circuit

This is an AMI/HDB3, CMI, NRZ/RZ, or CLOCK signal input circuit.

This converts each signal into a signal with constant amplitude by automatically adjusting the amplifier gain according to the input level of each signal.

(2) R-Z5 CMI, R-Z6 AMI/HDB3 circuit

This circuit is used to decode the AMI/HDB3 and CMI coded signals to the NRZ signals. Also, it contains a clock recovery circuit and detects code errors.

(3) R-Z7 REGENERATOR, R-Z8 WORD circuit

This circuit has a PRBS, WORD generator and generates the patterns synchronized with the input signal patterns.

Also, it detects bit errors by comparing input signal patterns with the patterns regenerated in the receiver.

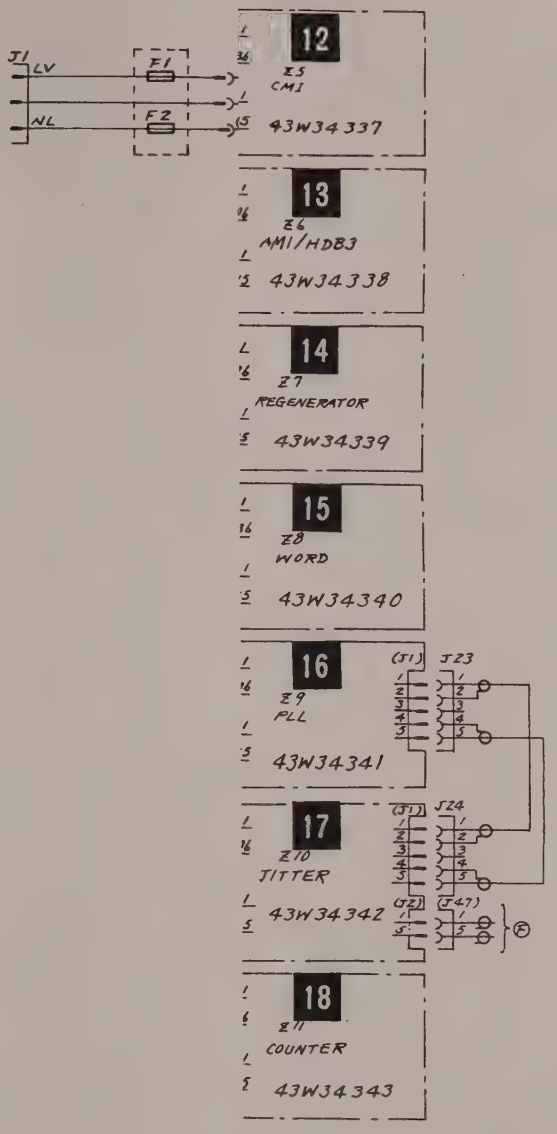
(4) R-Z8 WORD, R-Z9 PLL, R-Z10 JITTER circuits

This circuit is used for jitter measurements and has such functions as jitter amplitude (UI_{p-p}) detection and jitter hit detection.

CAUTION

When troubleshooting as described in paragraph 3.5.1 to 3.3.5 (Transmitter) and 3.6.1 to 3.6.8 (Receiver), enter only the description of the ME520B(T) and ME520B(R) setting knobs different from "Reference Setting" (Fig. 6-47) shown in operation manual section 6 performance check.

APPLICATION	REVISIONS



MATERIAL	FINISH	10
SCALE :		

DEP

ALYZER
M

DRAWING No. 43W34335 1/1

ANRITSU CORP.

3.6.1 R-Z16 POWER SUPPLY 22 P.C. Board ⚠

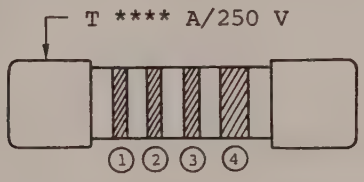
(1) Changing ac line voltage rating

The ME520B receiver operates at the ac line voltage shown in Table 3-19. (See Note at the beginning of this manual).

Table 3-19 Receiver Fuse Rating

ac line voltage	Receiver ac line fuse
90 to 138 V	5 A (see Note)
180 to 250 V	3.15 A (see Note)

Note: Color code of fuse



*** A	1	2	3	4
5 A	green	black	red	blue
3.15 A	orange	brown	red	blue

(a) Remove the top cover according to paragraph 2.2.2-(1).

(b) Change ac line voltage rating by changing the switch on the top of the power supply.

(c) When changing the ac line voltage, replace the two ac line fuses on the rear panel accoridng to Table 3-19. (See Note at the beginning of this manual).

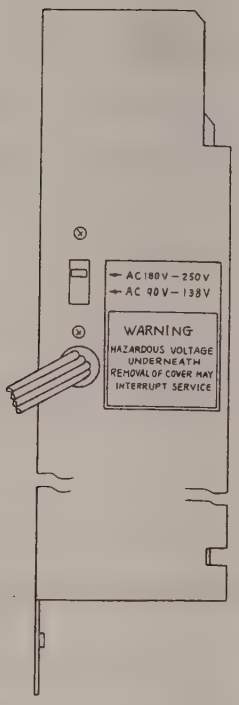


Fig. 3-73 Changing the ac Line Voltage Rating

(2) Replacing secondary side fuse (dc fuse)

(a) Remove the R-Z16 power supply P.C. board as described in paragraph 2.2.4-(5).

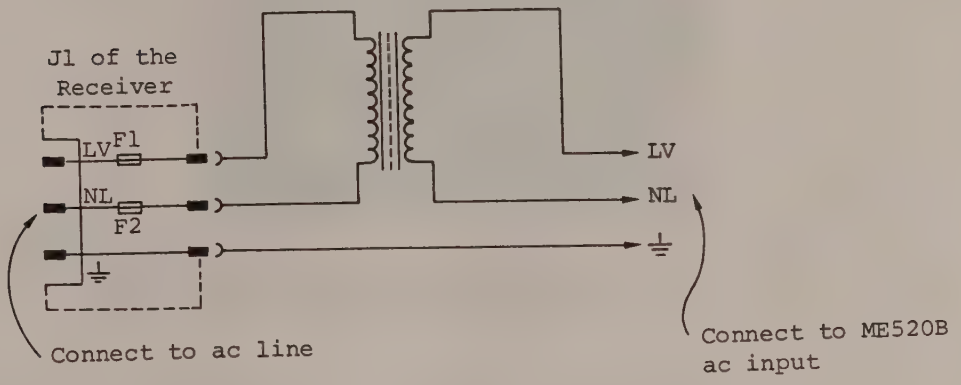
(b) Replace the fuses F1 to F5 on the P.C. board by removing them from the fuse holders. (See Fig. 3-73).

CAUTION

When changing the ac line voltage rating or replacing the secondary side fuse, turn off the POWER switch on the front panel and disconnect the power supply cord from the ac outlet.

(3) Troubleshooting

Remove the case of the T-Z16 P.C. board according to paragraph 2.2.4-(5) and insert only the P.C. board in the R-Z17 motherboard; then, check the following.



F1, 2 Fuse T ****A/250 V (time-lag fuse)

3.15 A 230 V 1:1 50/60 Hz Isolation Transformer
or 5 A 115 V 1:1 50/60 Hz Isolation Transformer

Fig. 3-74 Connection of Isolation Transformer

CAUTION

R-Z16 power transformer's primary side is directly connected to the ac line usually. To avoid a danger, be sure to connect the isolation transformer between the ac line and the ME520B ac input as shown in Fig. 3-74 when checking steps (a), (b), (c) and (e) of paragraph 3.6.1-(1).

(a) Check the TP ❶ signal waveform by connecting the oscilloscope probe ground terminal to the ▽ portion of R-Z16.

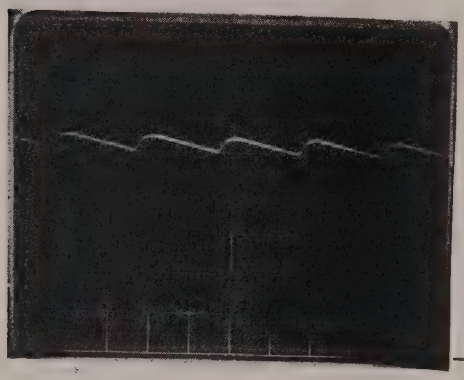


Fig. 3-75 TP ❶ / ▽ Waveform or R-Z16

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b) Check the signal waveform between pin numbers ❷ and 3 of the T3 using the oscilloscope (TP 2).

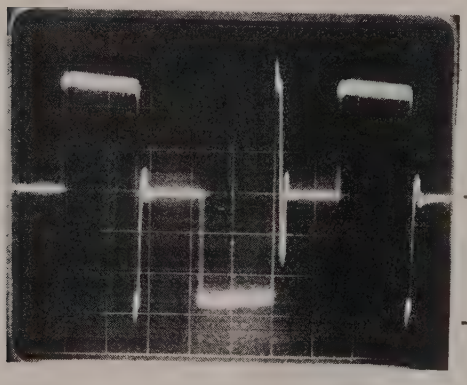


Fig. 3-76 TP ❷ Waveform of R-Z16

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(c) Check the TP ❸ and TP ❹ waveforms by connecting the oscilloscope probe ground terminal to the ▽ portion of R-Z16.

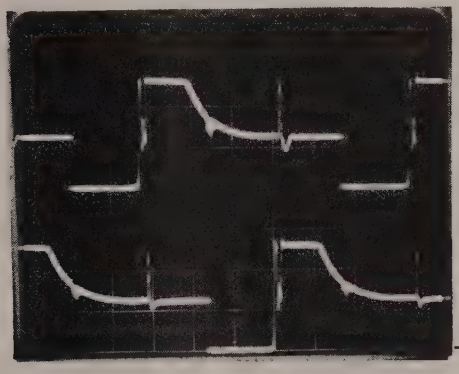


Fig. 3-77 TP ❸ ❹ Waveform of R-Z16

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(d) Check the signal waveform between pin numbers 13 and 15 of the T3 using the oscilloscope (TP ❺).

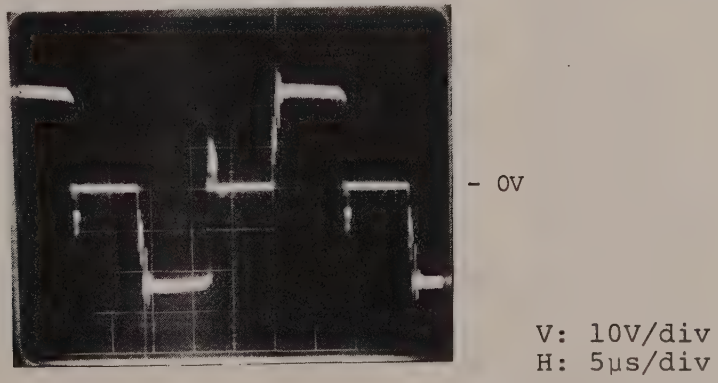


Fig. 3-78 TP ❺ Waveform of R-Z16

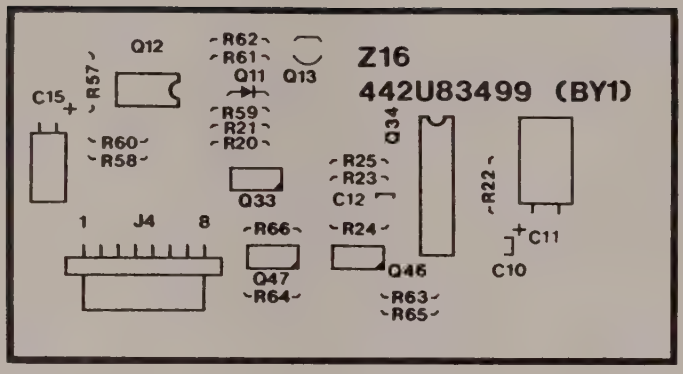
If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(e) Check that the TP ❼ voltage is approx. +2.5 V by connecting the voltmeter probe ground terminal to the ▽ portion of R-Z16.

If the above value is OK, to to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(f) Check that the TP ❻ voltage is approx. +4.9 V by connecting the voltmeter probe ground terminal to the ⏚ portion of R-Z16.

If the above value is OK, R-Z16 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.



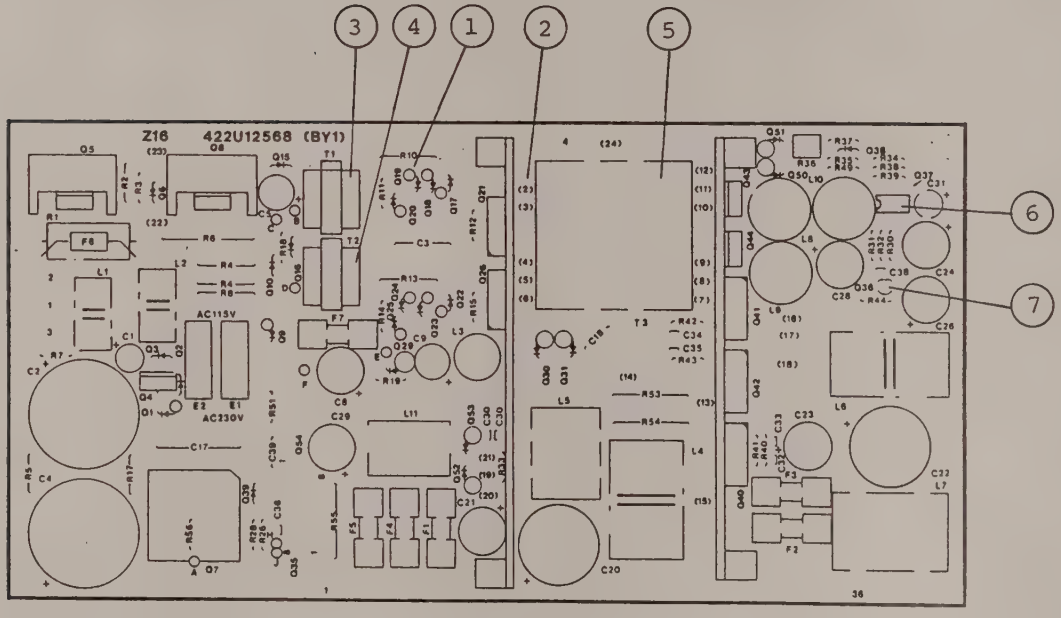
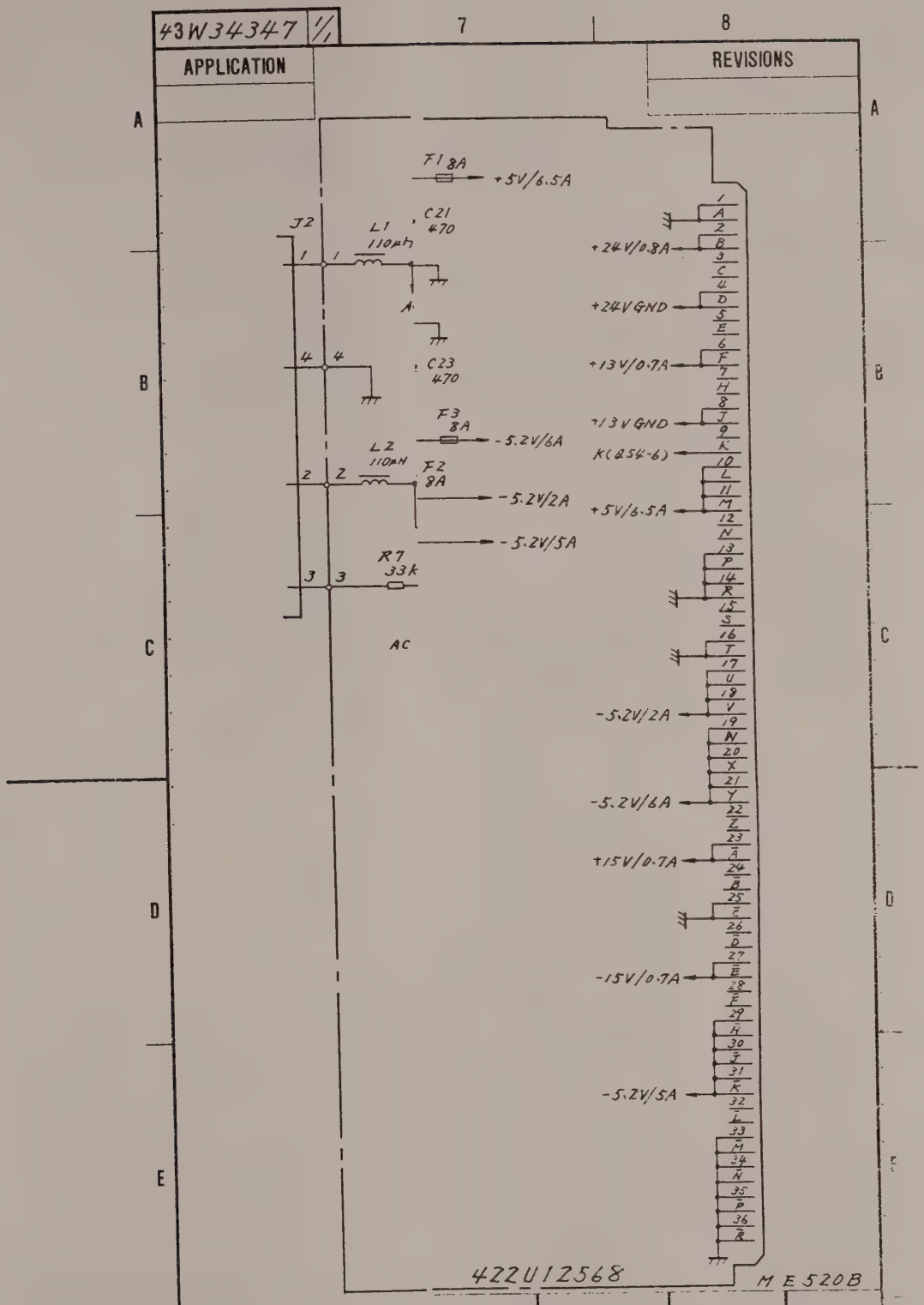


Fig. 3-79 Parts Layout of R-Z16
POWER SUPPLY P.C. Board 22


43W34347 1/1
APPLICATION
REVISIONS
F1 8A
+5V/6.5A
J2
L1 110μH
C21 470
C23 470
F3 8A
-5.2V/6A
L2 110μH
F2 8A
-5.2V/2A
-5.2V/5A
R7 33k
AC
+24V/0.8A
+24VGND
+13V/0.7A
+13VGND
K(254-6)
+5V/6.5A
-5.2V/2A
-5.2V/6A
+15V/0.7A
-15V/0.7A
-5.2V/5A
422U12568
ME520B
MATERIAL
FINISH
SCALE
22
DEP
PPLY
RAM
DRAWING No.
43W34347 1/1
ANRITSU CORP.
3-135/3-136
No. 0023-1985.08

3.6.2 R-Z4 INPUT 11 P.C. Board

(1) Circuit Description

Fig. 3-80 shows a block diagram of the R-Z4 INPUT circuit.

The CMI input and AMI/HDB3 input correct the high frequency range losses resulting the coaxial cables on the $\sqrt{f}$ AGC circuit.

The threshold and termination conditions for both the NRZ/RZ data input and the clock signal are set. And then input signals are amplified by the amplifier. The clock signal is output through the clock/$\overline{\text{clock}}$ changeover switch.

The CMI input and AMI/HDB3 input monitor amplifier is used when the inputs are connected to the monitor (protect) point of digital system.

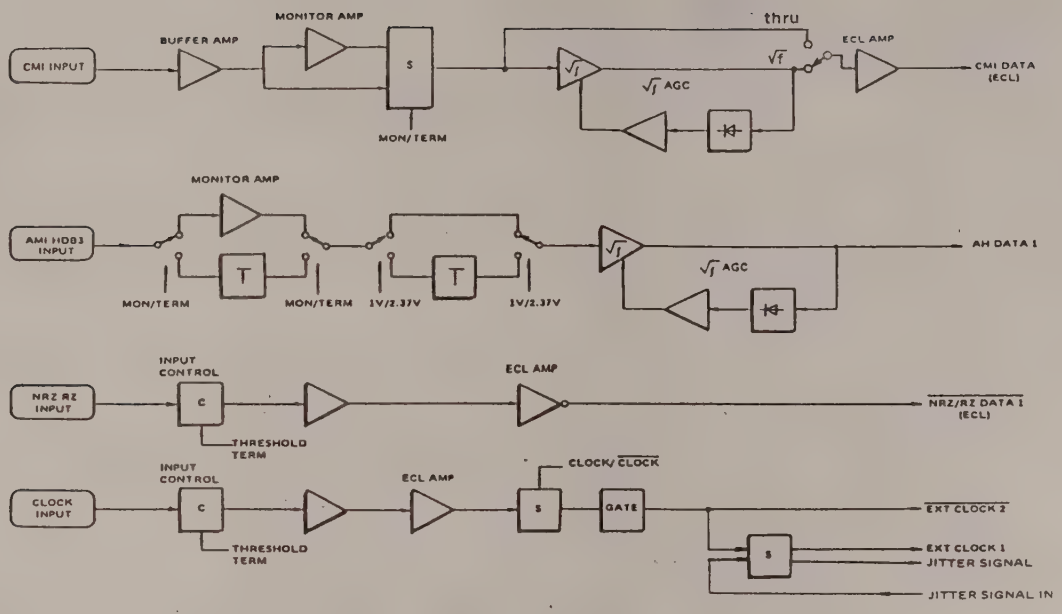


Fig. 3-80 R-Z4 INPUT Block Diagram

$\sqrt{f}$ AGC Circuit:

When the CMI or AMI/HDB3 signal is measured in the TERM mode, this $\sqrt{f}$ AGC circuit operates. This circuit is used to automatically equalize the input signal waveform distortions when they are sent through the long cables. (See Fig. 3-81)

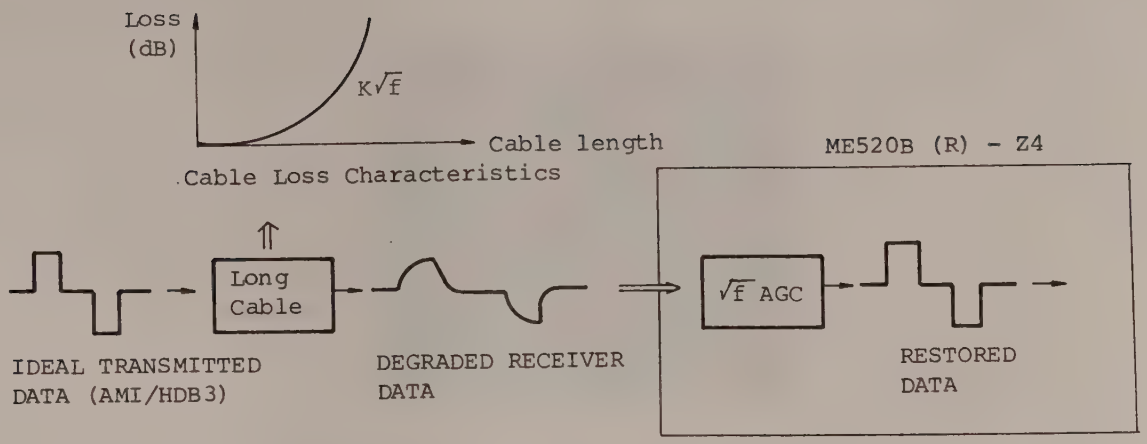


Fig. 3-81 $\sqrt{f}$ AGC Circuit

(2) Troubleshooting and adjustment

After lifting the R-Z4 P.C. board using the R-Z1 extender board, perform the troubleshooting and adjustment. (See Fig. 3-82)

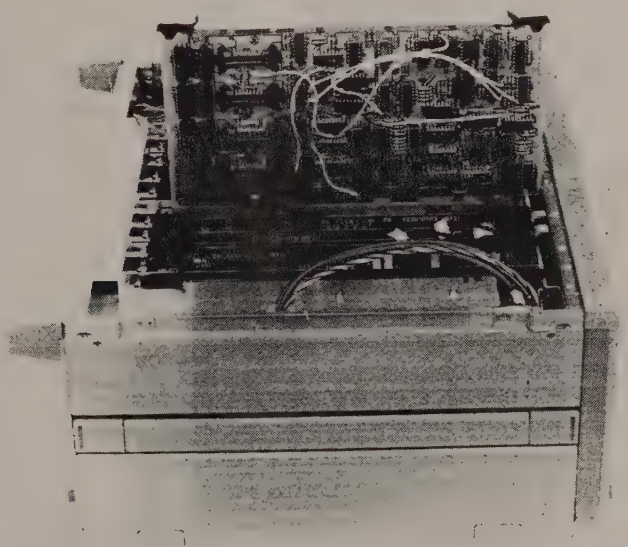


Fig. 3-82 P.C. Board Troubleshooting Configuration

(a)

BIT RATE	;	34368 (kb/s)
FORMAT	;	HDB3
INPUT MODE	;	MON(ITOR)
TRANSMITTER PATTERN	;	PRBS 2^{23}-1 (ZERO SUB. 0)

Insert a 26 dB attenuator between the ME520B(T) AMI/HDB3 output terminal and the ME520B(R) AMI/HDB3 input terminal.

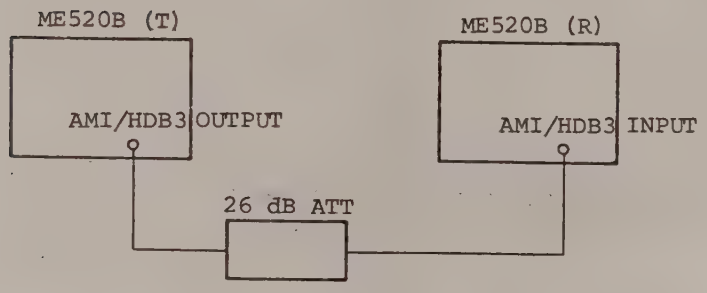
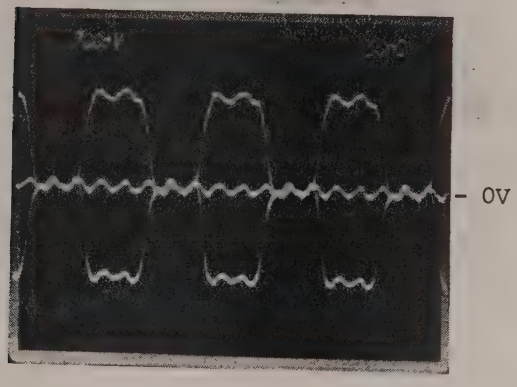


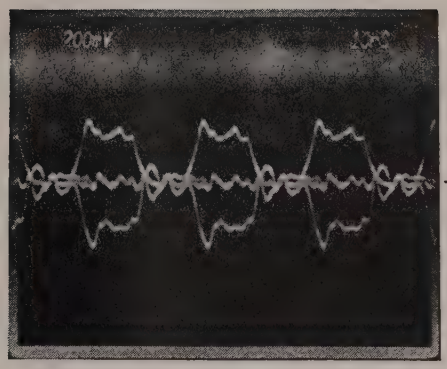
Fig. 3-83

Check the TP ❶ and TP ❷ signal waveforms using the oscilloscope.



V: 200mV/div
H: 10ns/div

Fig. 3-84 TP ❶ Waveform of R-Z4



V: 200mV/div
H: 10ns/div

Fig. 3-85 TP ❷ Waveform of R-Z4

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q56-4(5) and 6(7) pin status according to the following Table 3-20 by changing the bit rate and input mode.

Table 3-20

BIT RATE	INPUT MODE	Pin No. STATUS Q56-4	Q56-6
704 (kb/s)	TERM	L	H
	MON	H	L
2048 (kb/s)	TERM	L	H
	MON	H	L
8448 (kb/s)	TERM	L	H
	MON	H	L
34368 (kb/s)	TERM	L	L
	MON	H	L

(STATUS: TTL Level)

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(b)

BIT RATE	;	34368 (kb/s)
FORMAT	;	RZ
THRESHOLD	;	ECL
PATTERN	;	WORD all 1

Check the TP ❸ and TP ❹ signal waveforms using the oscilloscope.

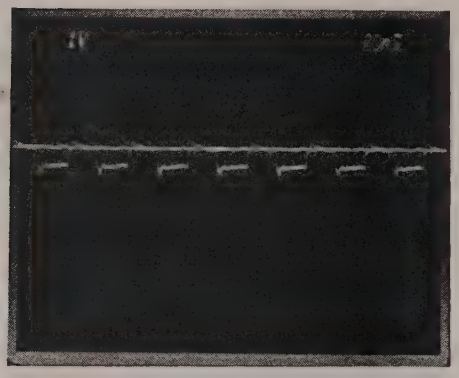


Fig. 3-86 TP ❸ Waveform of R-Z4

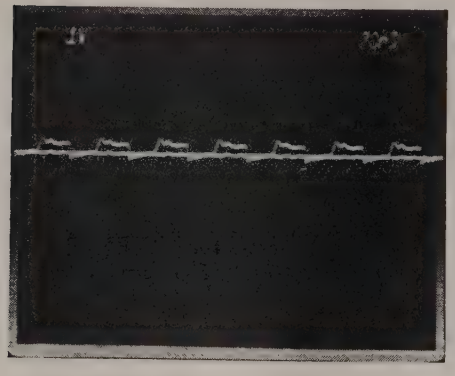


Fig. 3-87 TP ❹ Waveform of R-Z4

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q56-1, Q58-9, and Q58-10 pin statuses according to the following Table 3-21 by changing the ME520B(R) NRZ/RZ input threshold.

Table 3-21

THRESHOLD \ PIN No.	STATUS Q56-1	Q58-9	Q58-10
MAN	H	H	L
GND	H	L	L
ECL	L	L	H

(STATUS: TTL Level)

If not OK after performing the above test, perform the following adjustment.

1) Adjustment

Adjust the R22 for 50% duty of the RZ signal waveform by observing the Q60-3 pin waveform using the oscilloscope.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(c)
BIT RATE ; 34368 (kb/s)
FORMAT ; RZ
CLOCK INPUT THRESHOLD ; ECL

Check the TP ❺ and TP ❻ signal waveforms using the oscilloscope.

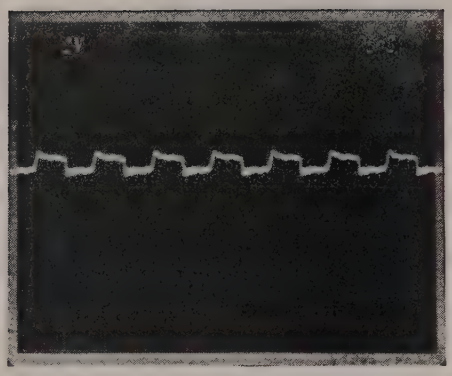


Fig. 3-88 TP ❺ Waveform of R-Z4

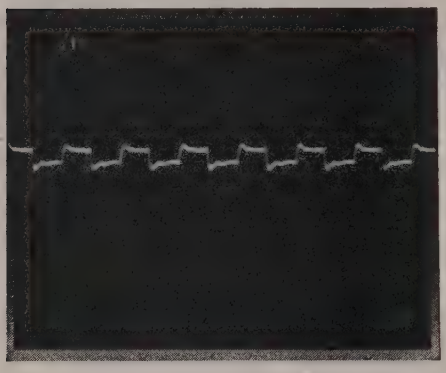


Fig. 3-89 TP ❻ Waveform of R-Z4

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q56-3, Q61-10, and Q61-11 pin statuses according to the following Table 3-22 by changing the ME520B(R) clock input threshold.

Table 3-22

THRE-SHOLD	PIN No.	STATUS Q56-3	Q61-10	Q61-11
AUTO		H	L	H
GND		H	H	L
ECL		L	L	L

(STATUS: TTL Level)

If not OK after performing the above test, perform the following adjustment.

1) Adjustment

Adjust the R58 for 50% duty of the clock signal waveform by observing the Q64-3 pin waveform using the oscilloscope.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(d) [BIT RATE ; 68736 (kb/s)
FORMAT ; CMI
INPUT MODE ; MON]

Insert a 26 dB attenuator between the ME520B(T) CMI output terminal and the ME520B(R) CMI input terminal.

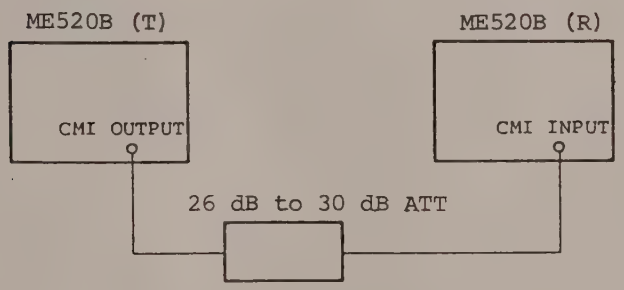
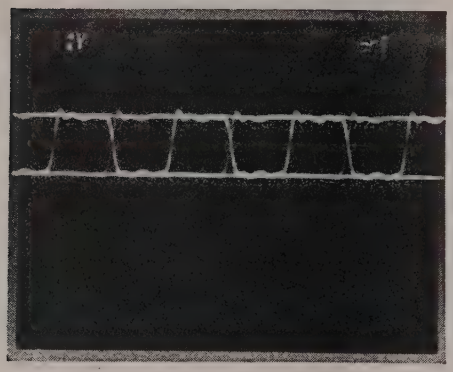


Fig. 3-90

Check the TP ❼ waveform using the oscilloscope.



- 0V

V: 1V/div
H: 5ns/div

Fig. 3-91 TP ❼ Waveform of R-Z4

CAUTION

The ME520B(R) CLOCK input and NRZ/RZ input terminals must be open.

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

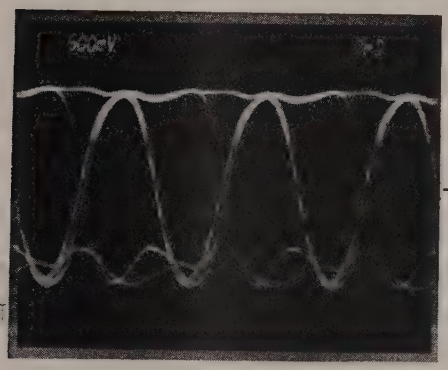
1) Check whether the Q55-12 pin status is set to TTL high level.

   Check whether the Q54-14 pin status is set to TTL low level and the Q54-15 pin status is set to TTL high level.

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

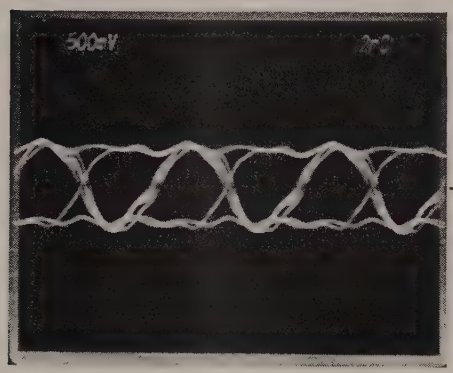
(e) [BIT RATE ; 139264 (kb/s)
FORMAT ; CMI
INPUT MODE ; TERM]

Check the TP ❽ and TP ❾ signal waveforms using the oscilloscope.



V: 1V/div
H: 2ns/div

Fig. 3-92 TP ❽ Waveform of R-Z4



V: 500mV/div
H: 2ns/div

Fig. 3-93 TP ❾ Waveform of R-Z4

If the above waveforms are OK, Z4 is OK. If not OK, perform the following test.

1) Check the Q55-12, Q54-14, and Q54-15 pin statuses according to the following Table 3-23.

Table 3-23

Pin No.	STATUS (TTL)
Q55-12	H
Q54-14	H
Q54-15	L

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

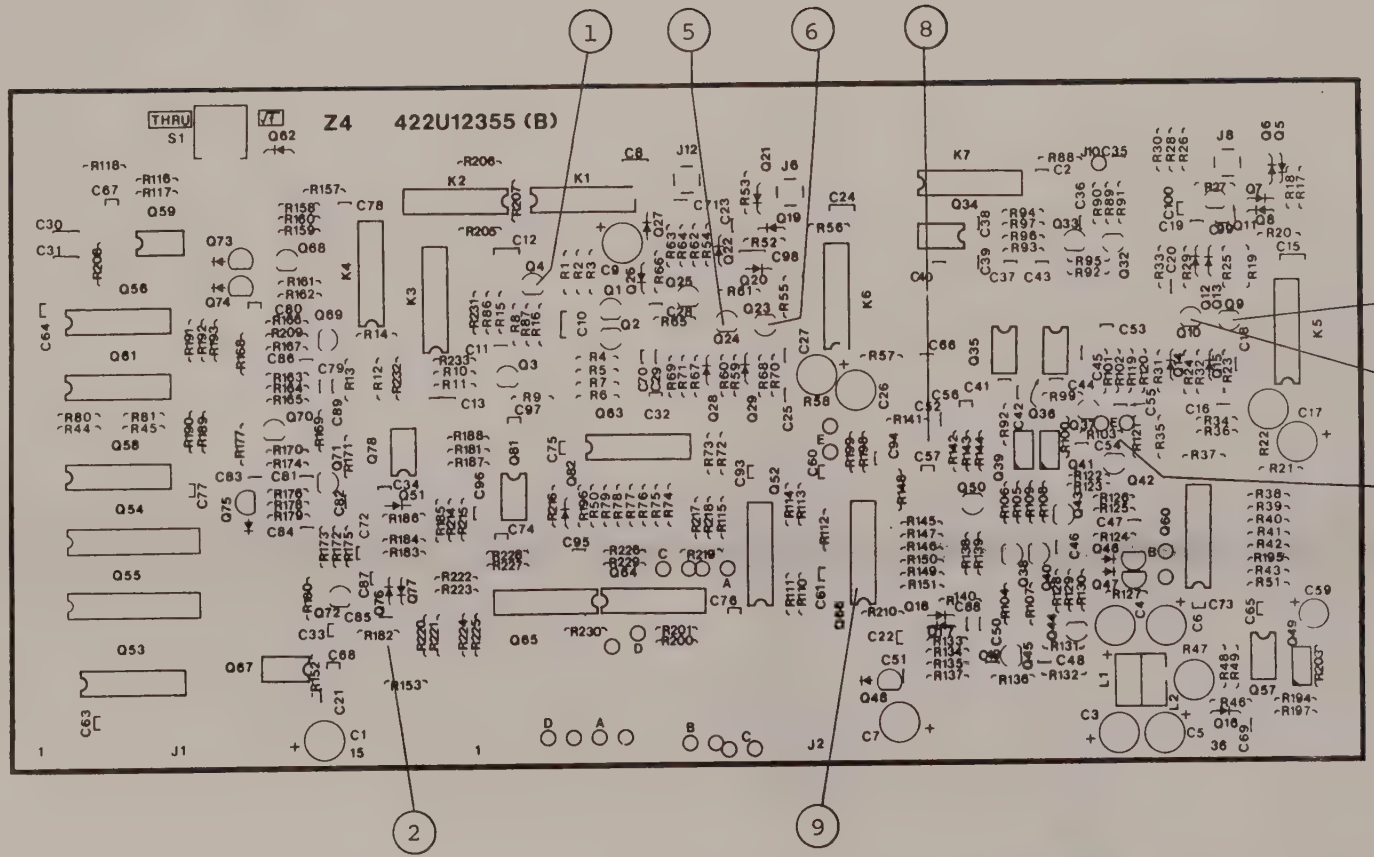
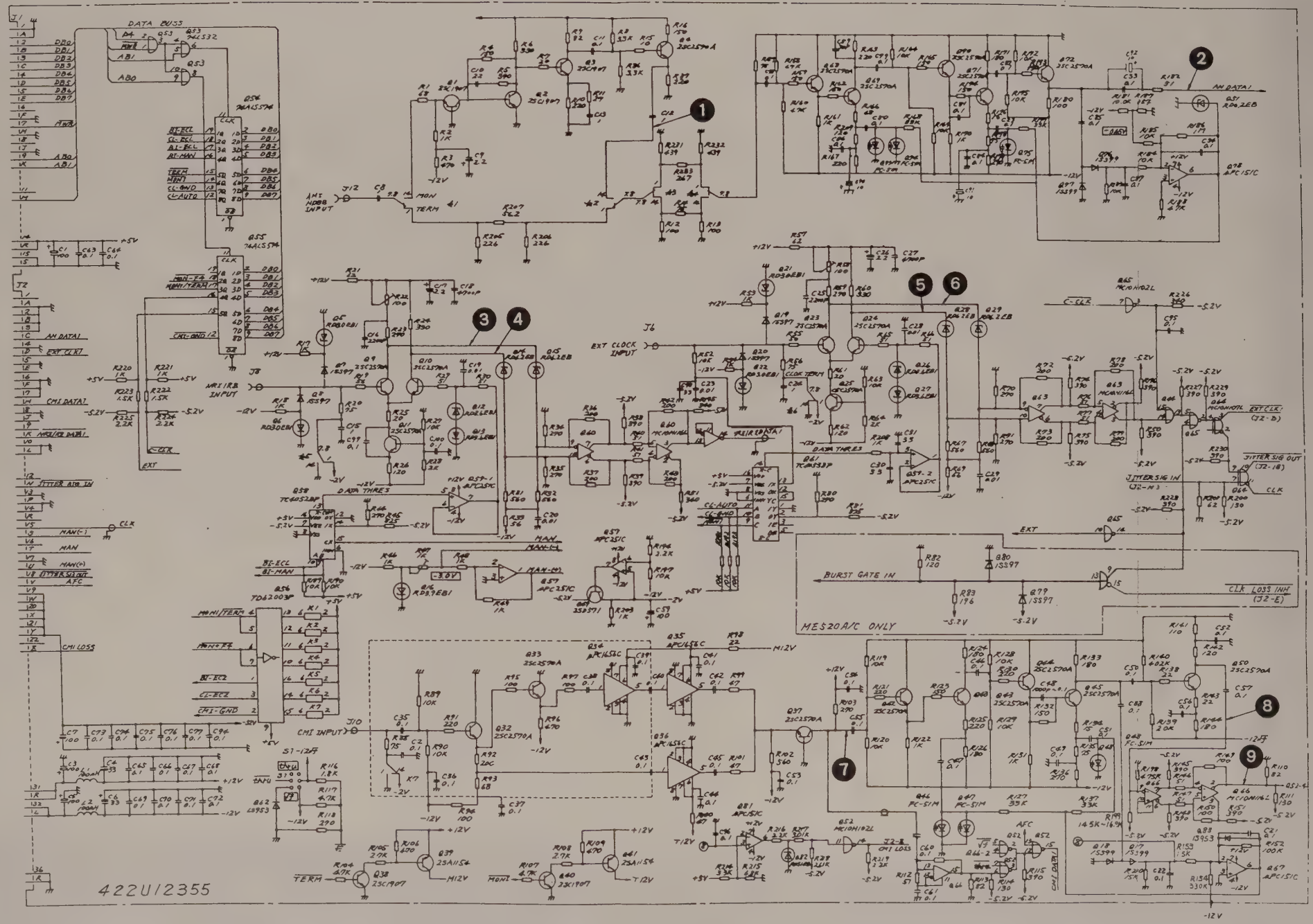


Fig. 3-94 Parts Layout of R-Z4 INPUT P.C. Board 11

APPLICATION

REVISIONS



PC Board	422U12355
Parts List	44W84801

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY			TRACED BY	SCALE	
APPROVED BY			DRAWN BY		

TITLE: R-Z4 INPUT CIRCUIT DIAGRAM

DRAWING No: 43W34336 1/1

11

DEP

No 0021 1985.08

ANRITSU CORP. 3-151/3-152

3.6.3 R-Z5 CMI 12 P.C. Board

(1) Circuit Description

Fig. 3-95 shows a block diagram of the R-Z5 board.

The Z5 CMI circuit consists of the clock recovery circuit, CMI decoder, and demultiplexer (DEMUX).

First, the clock signal content is extracted from the CMI input data by the clock recovery circuit. Then, the decoder uses the extracted clock signal to decode the CMI data into the NRZ data. At this time, code errors are detected simultaneously. The recovered clock signal is also used for the jitter measurement as shown in Fig. 3-143.

The decoder contains the signal loss detect function and detects a status when the CMI data is cut off.

The data decoded into the NRZ is also demultiplexed to separate half-clock data A and data B. Then bit errors are detected by the Z7·Z8 ERROR DETECTOR circuits. The demultiplexer contains the AIS detect function and detects a status when the data become all "1".

The NRZ/RZ data is input directly to the demultiplexer.

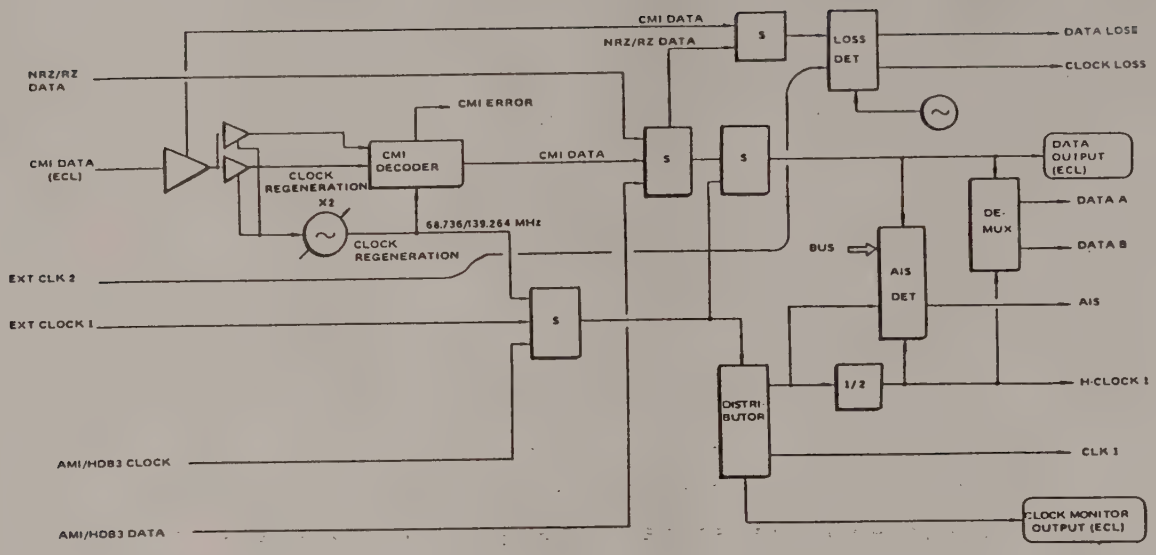


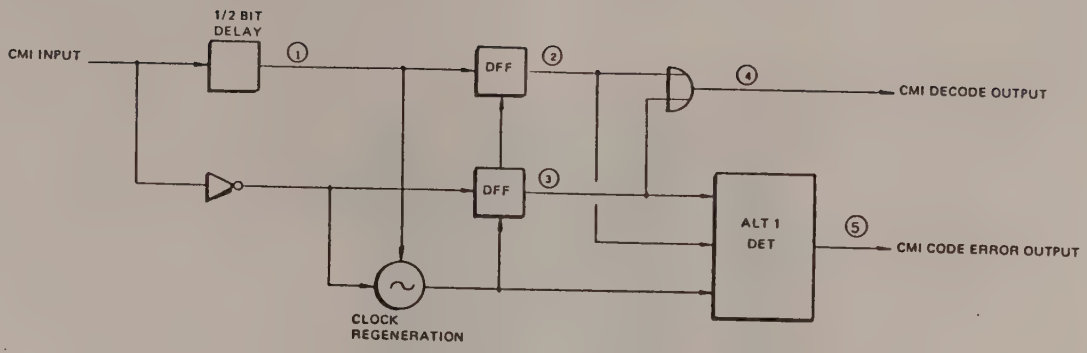
Fig. 3-95 Block Diagram of R-Z5 CMI

CMI Code Error:

CMI code violation errors are detected in accordance with the following sequence rules.

Determine whether the CMI signal polarities "0" and "1" corresponding to binary data "1" are arranged alternately. If they are, not code error is detected. If they are not, a single code error is detected for "0" "0" or "1" "1".

This circuit is not related to the CMI signal corresponding to binary data "0" (See Fig. 3-96).



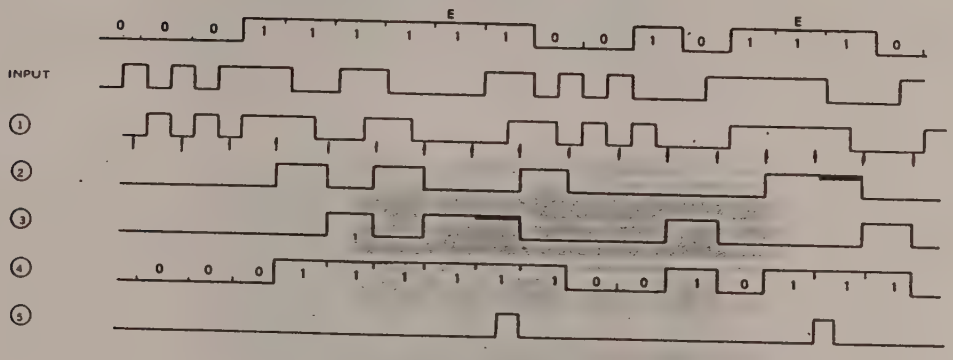


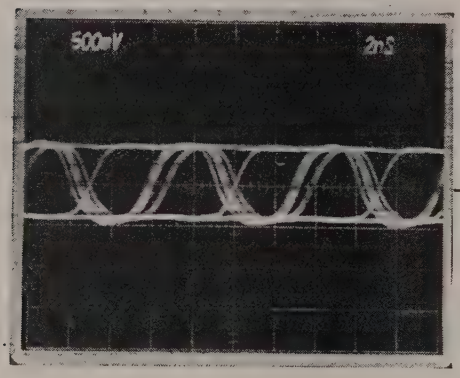
Fig. 3-96 CMI Code Error Detection

(2) Troubleshooting and Adjustment

After lifting the Z5 P.C. board using the Z1 extender, perform troubleshooting adjustment. (See Fig. 3-82).

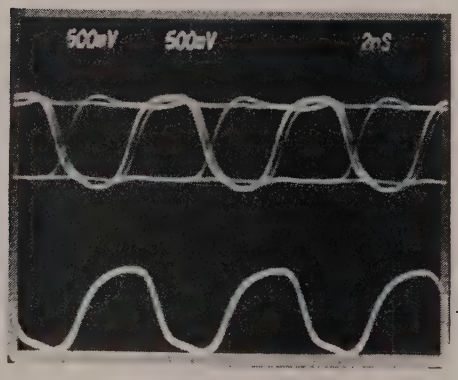
(a)
BIT RATE	;	139264 (kb/s)
FORMAT	;	CMI
PATTERN	;	PRBS $2^{23}-1$

Check the TP ❶ to TP ❺ and TP ❼ signal waveforms using the oscilloscope.



V: 500mV/div
H: 2ns/div

Fig. 3-97 TP ❶ Waveform of R-Z5



V: 500mV/div
H: 2ns/div

Fig. 3-98 TP ❷ ❺ Waveform of R-Z5

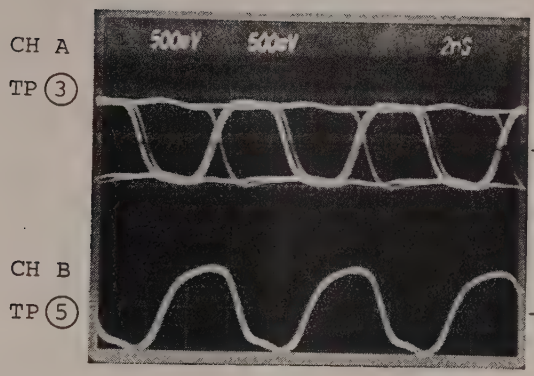


Fig. 3-99 TP ❸ ❺ Waveform of R-Z5

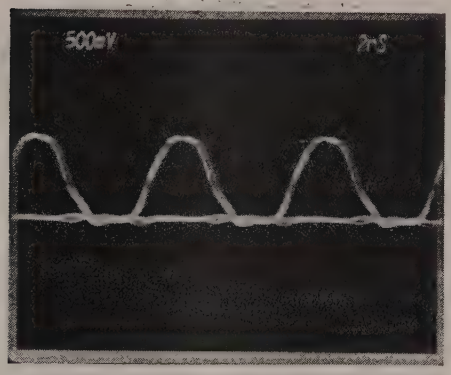


Fig. 3-100 TP ❹ Waveform of R-Z5

Fig. 3-101 TP ❼ Waveform of R-Z5

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following adjustment.

1) Adjustment

i) Adjust the R118 for 50% duty of the CMI signal by observing the waveform of the Q28-15 pin using the oscilloscope.

ii) Adjust the R121 for 50% duty of the CMI signal by observing the waveform of the Q28-7 pin using the oscilloscope.

iii) Adjust the C13 for the minimum jitter by observing the signal of the ME520B(R) CLOCK MONITOR (rear panel) using the oscilloscope.

iv) Set the BIT RATE to 68736 (kb/s).

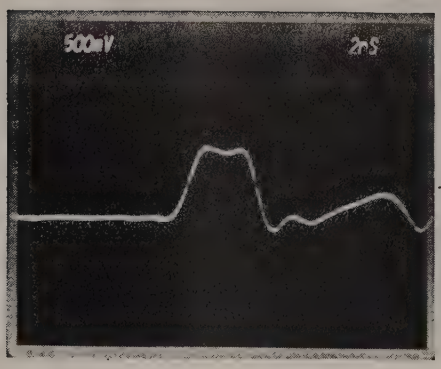
Adjust the C16 for the minimum jitter by observing the signal of the ME520B(R) CLOCK MONITOR using the oscilloscope.

If not OK after the performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(b)

BIT RATE	;	139264 (kb/s)
FORMAT	;	CMI
ERROR ADD RATE	;	10^{-3}
ERROR ADD MODE	;	CODE

Check the TP ❻ signal waveform using the oscilloscope.

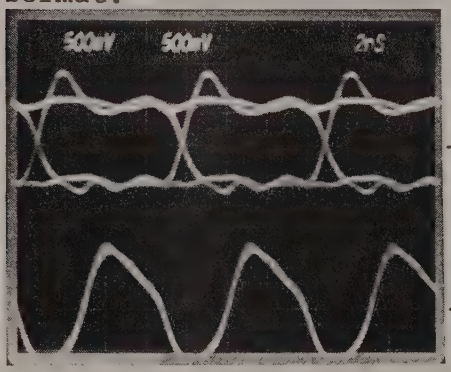


V: 500mV/div
H: 2ns/div

Fig. 3-102 TP ❻ Waveform of R-Z5

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

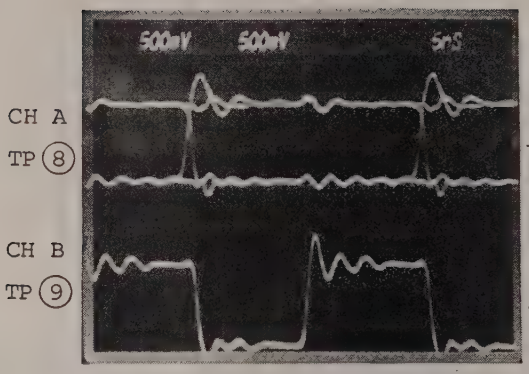
(c) Check the TP ❽ and TP ❾ signal waveforms using the oscilloscope by changing the bit rate and format.



BIT RATE 139264 (kb/s)
FORMAT CMI

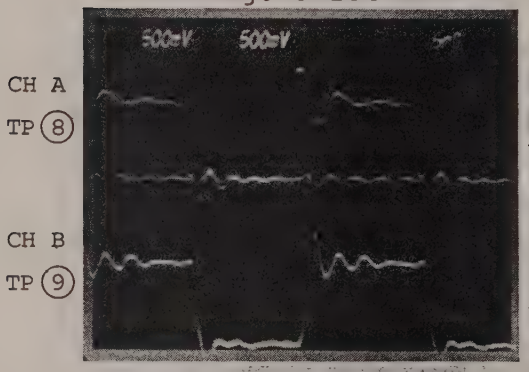
V: 500mV/div
H: 2ns/div

Fig. 3-103



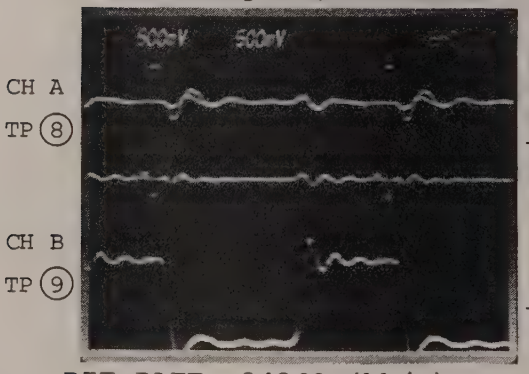
BIT RATE 34368 (kb/s) V: 500mV/div
FORMAT NRZ H: 5ns/div

Fig. 3-104



BIT RATE 34368 (kb/s) V: 500mV/div
FORMAT RZ H: 5ns/div

Fig. 3-105



BIT RATE 34368 (kb/s) V: 500mV/div
FORMAT HDB3 H: 5ns/div

Fig. 3-106

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q25, Q37 (data selector), and Q40 (clock selector) statuses according to the following Table 3-24.

Table 3-24

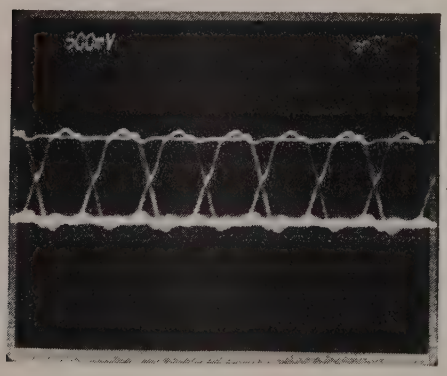
	STATUS				
Pin No. / FORMAT	Q37-13	Q25-13	Q25-4	Q40-4	Q40-11
AMI/HDB3	H	H	L	L	H
CMI	L	H	H	H	L
NRZ/RZ	H	L	H	H	H

(STATUS: ECL level)

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(d) [BIT RATE ; 139264 (kb/s)
FORMAT ; CMI]

Check the TP ⑩ signal waveform using the oscilloscope.



V: 500mV/div
H: 5ns/div

Fig. 3-107 TP ⑩ Waveform of R-Z5

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q19 to Q21 (counters) statuses and Q24 control terminal status according to the following Table 3-25 changing the ME520B(R) RECOVERY bit rate.

Table 3-25

Q No.	Q24		Q19				Q20				Q2			
Pin. No. / BIT RATE	10	13	12	11	6	5	12	11	6	5	12	11	6	5
704 8448 (kb/s)	H	L	L	L	L	L	H	L	H	L	H	H	L	L
34368 (kb/s)	H	L	L	L	L	L	L	L	L	L	L	H	H	L
68736 139264 (kb/s)	L	H	L	L	L	L	H	H	H	L	L	H	H	L
EXT	H	L	L	L	L	L	H	L	H	L	H	H	L	L

(STATUS: ECL Level)

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(e) [BIT RATE ; 139264 (kb/s)
FORMAT ; CMI]

Observe the TP ⓫ and TP ⓬ signal waveforms using the oscilloscope.

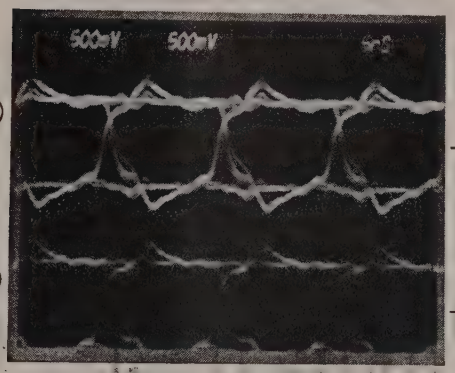


Fig . 3-108 TP ⓫ , ⓬ Waveform of R-Z5

If the above waveform is OK, Z5 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

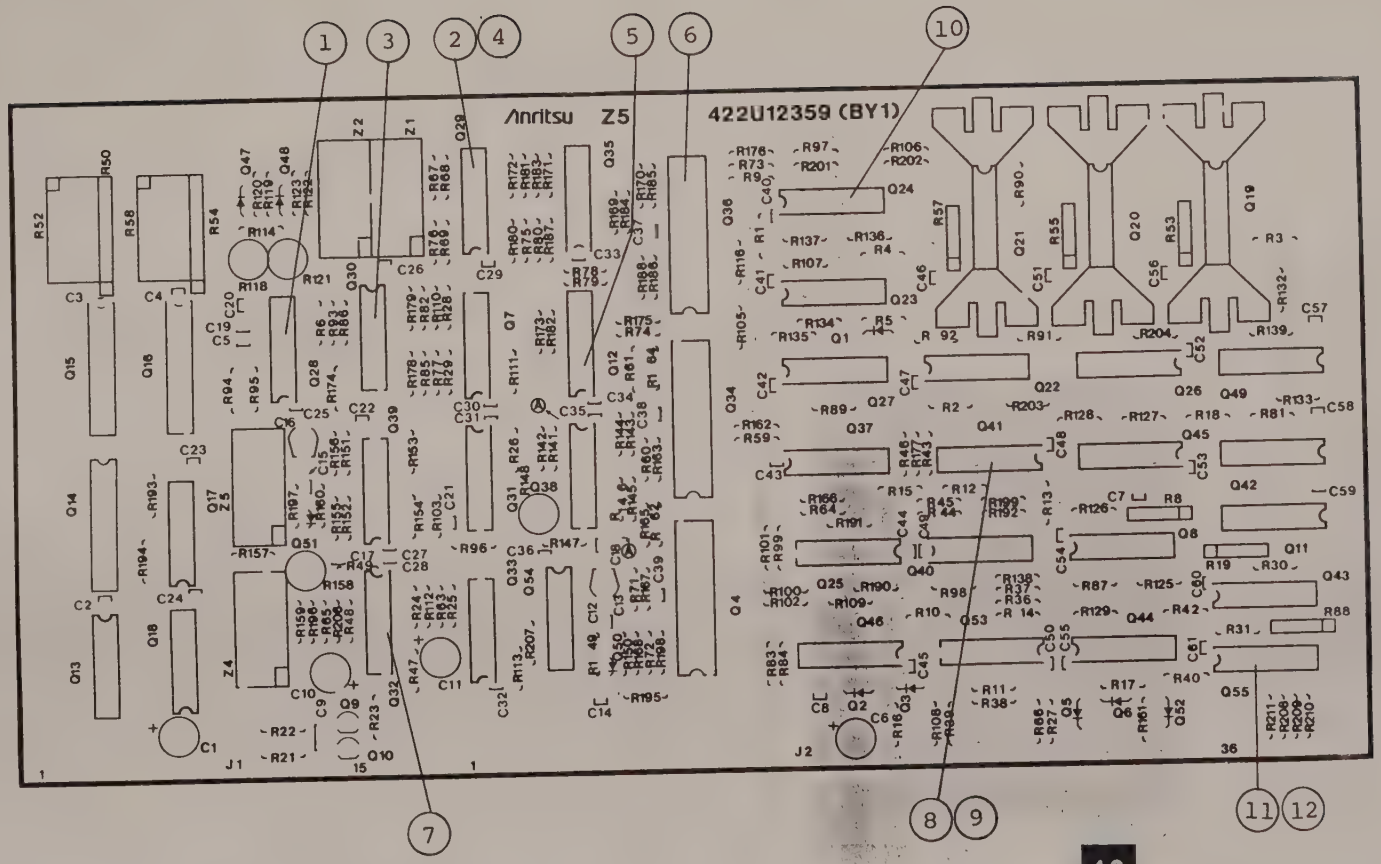
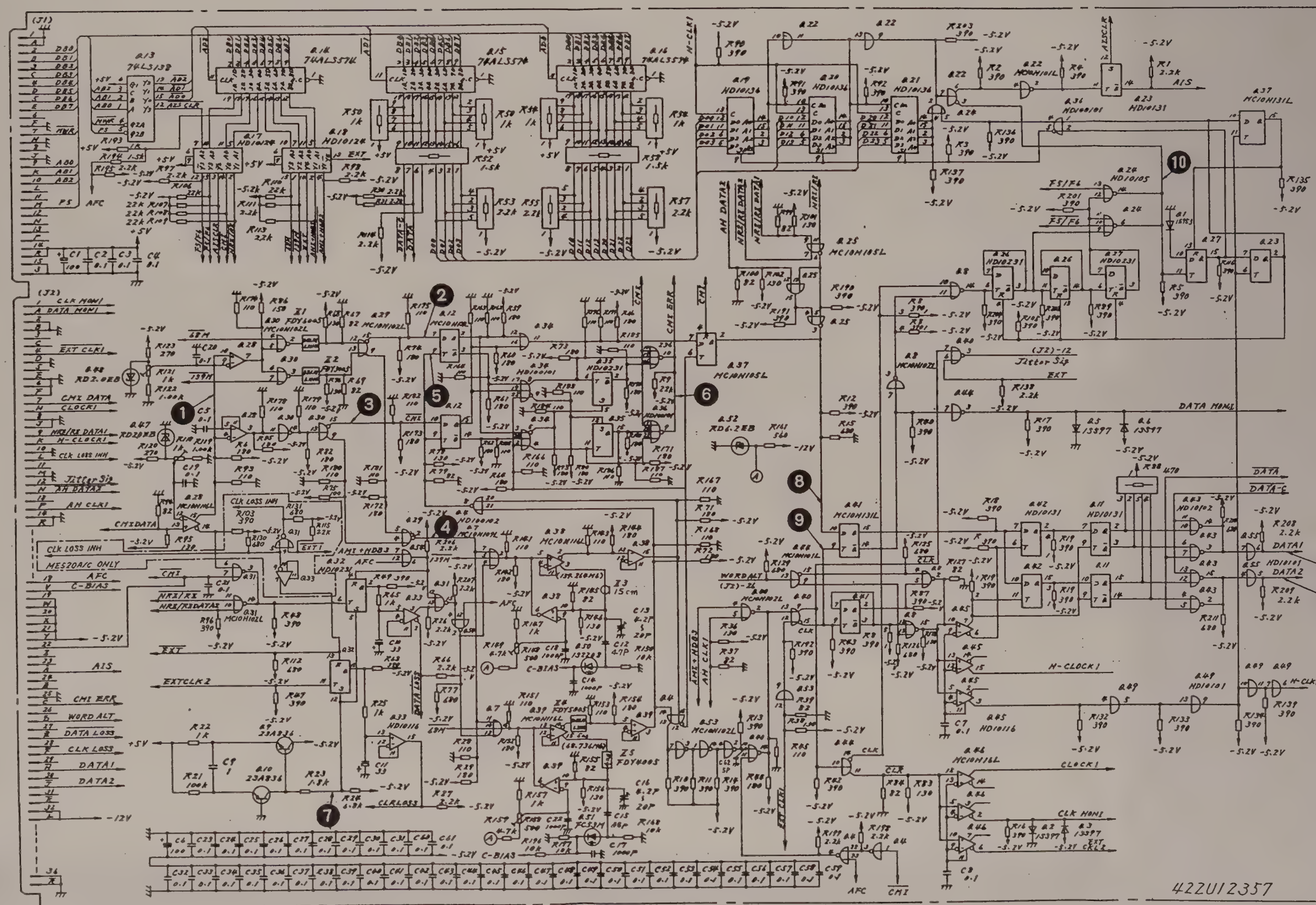


Fig. 3-109 Parts Layout of R-Z5 CMI P.C. Board 12

43W34337 1/1

REVISIONS

APPLICATION



Pc Board	422U12357
Parts List	44W84802

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY		TRACED BY		SCALE :	M-1
APPROVED BY		DRAWN BY			

12

TITLE R-Z5 CMI CIRCUIT DIAGRAM

DRAWING No. 43W34337 1/1

ANRITSU CORP. 3-165/3-166

DEP

No. 0021-1985 08

3.6.4 R-Z6 AMI/HDB3 13 P.C. Board

(1) Circuit Description

Fig. 3-110 shows a block diagram of the R-Z6 P.C. board.

The Z6 AMI/HDB3 circuit consists of the clock recovery circuit and the AMI/HDB3 decoder. First, the clock signal element is extracted from the AMI/HDB3 input data by the clock recovery circuit. Then, the decoder uses the extracted clock signal to decode the AMI/HDB3 data into the NRZ data. At this time, code errors are detected simultaneously. The recovered clock signal is also used for the jitter measurement shown in Fig. 3-143.

The decoder contains the signal loss detect function and detects a status when the AMI/HDB3 data is cut off. The AMI/HDB3 data decoded into the NRZ is transferred to the demultiplexer of the Z5 CMI circuit and is treated in the same way as CMI data.

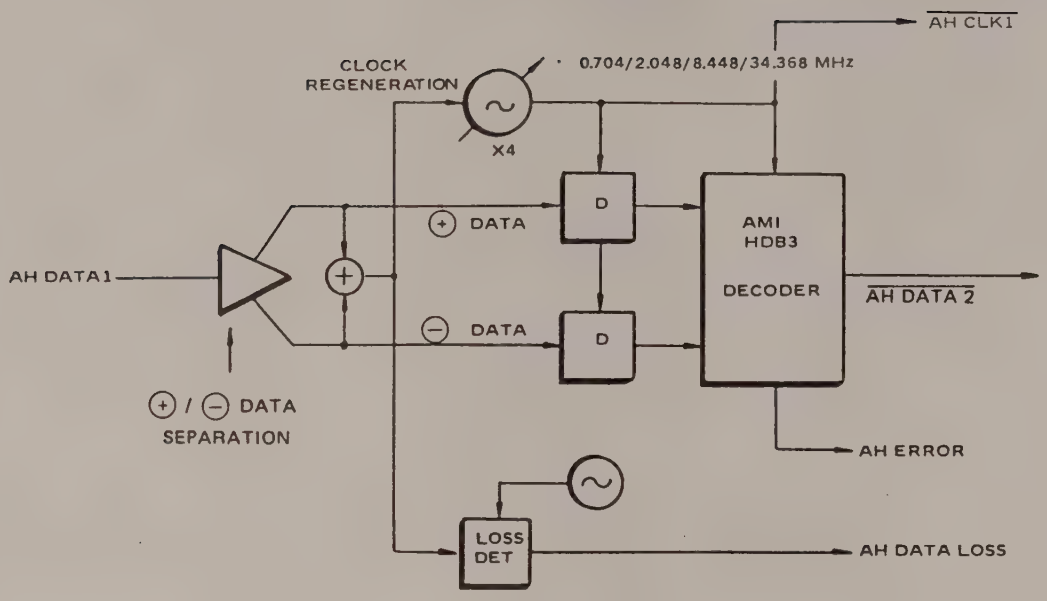


Fig. 3-110 Block Diagram of R-Z6 AMI/HDB3

(a) AMI Code Error

Code violation errors in the AMI code are used to violate the bipolar rule; in other words they occur when the same polarity (positive and negative) pulses are generated for 2 or more consecutive bits.

The 2nd and subsequent pulses will be changed into code violation error pulses. (See Fig. 3-111).

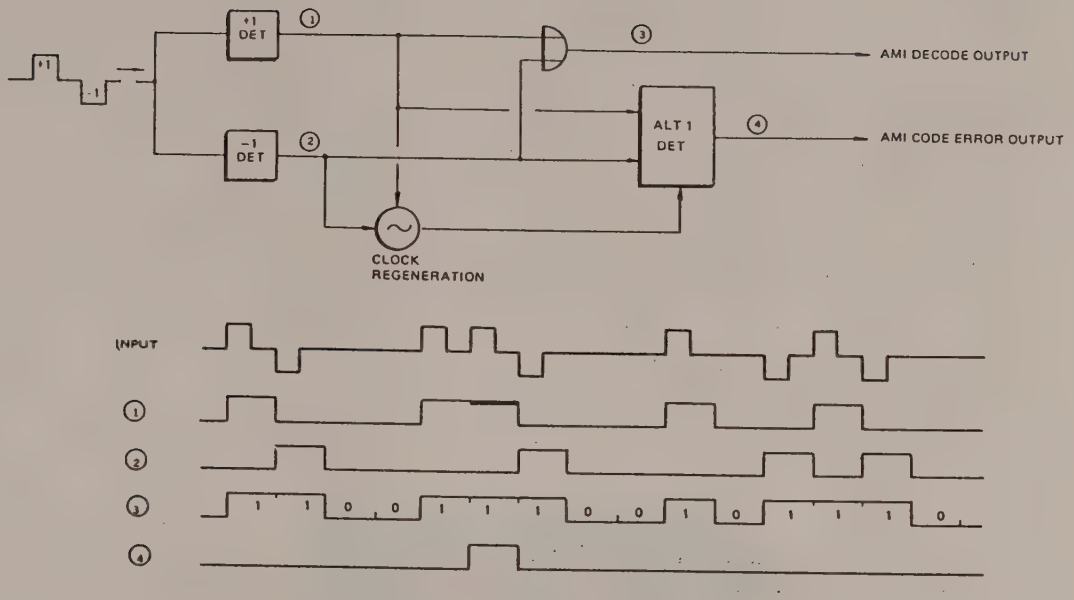


Fig. 3-111 AMI Code Errors

(b) HDB3 Code Error

Code violation errors in the HDB3 Code are detected as the "Violation of violations" rule, i.e., two consecutive bipolar violations with the same polarity. (See Fig. 3-112)

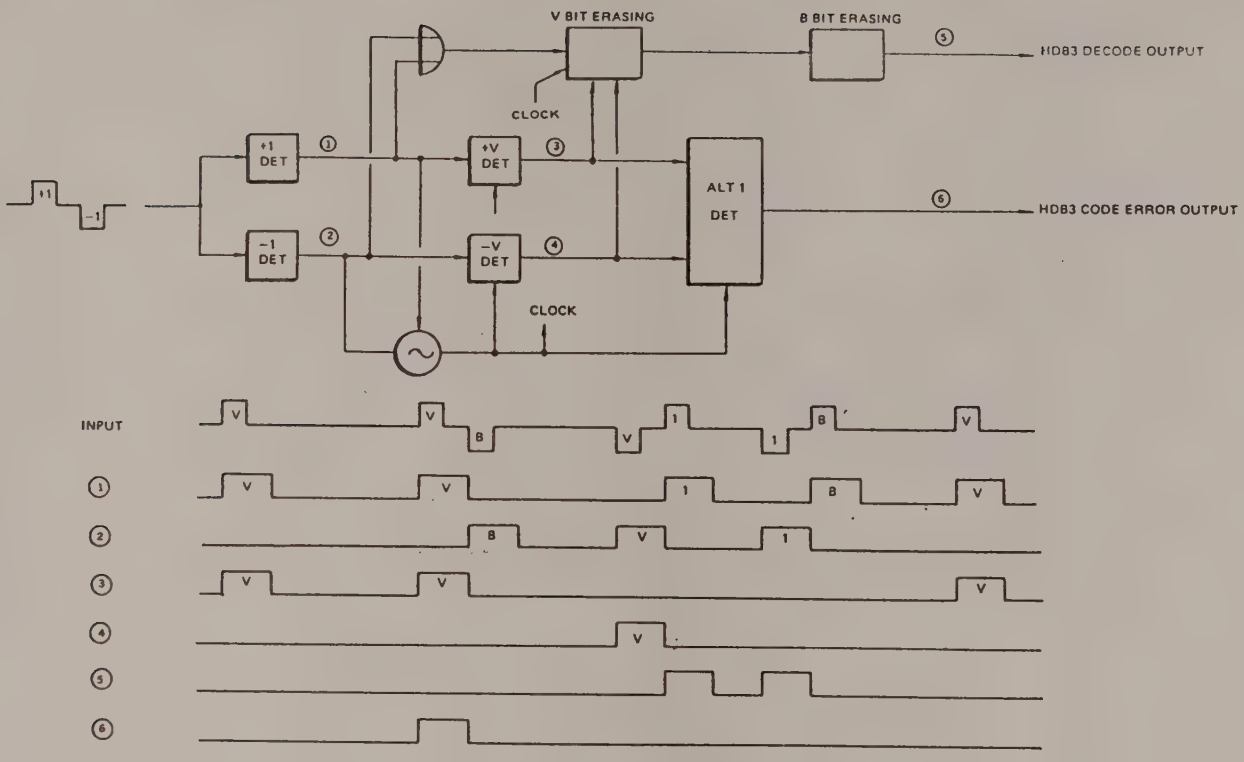


Fig. 3-112 HDB3 Code Errors

(2) Troubleshooting and adjustment

After lifting the R-Z6 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment. (See Fig. 3-82)

(a)
BIT RATE	;	34368 (kb/s)
FORMAT	;	HDB3
PATTERN	;	PRBS $2^{23}-1$

Check the TP ❶ to TP ⓬ and TP ⓮ signal waveforms using the oscilloscope.

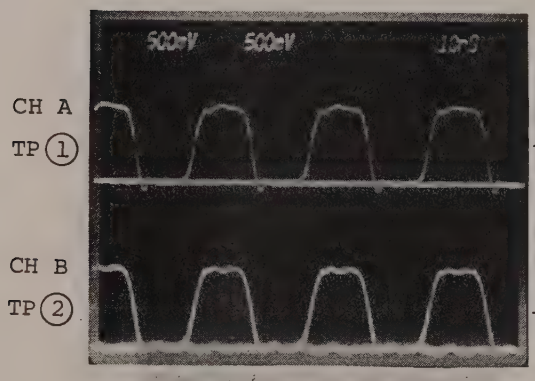


Fig. 3-113 TP ❶ , ❷ Waveform of R-Z6

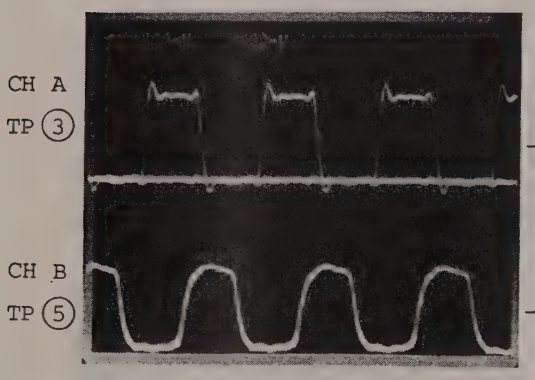


Fig. 3-114 TP ❸ , ❺ Waveform of R-Z6

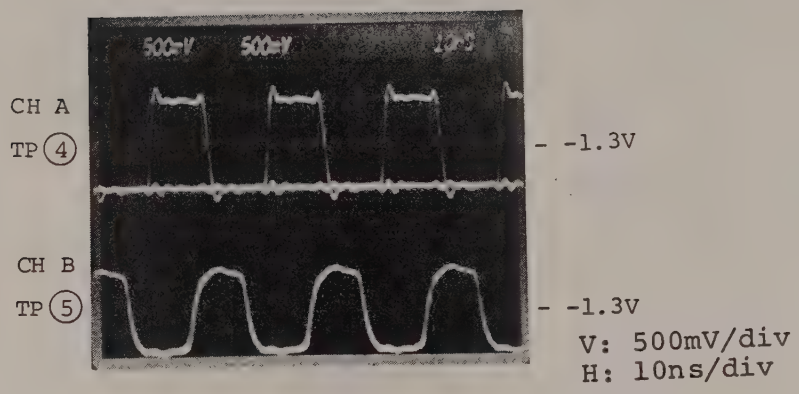


Fig. 3-115 TP ❹ , ❺ Waveform of R-Z6

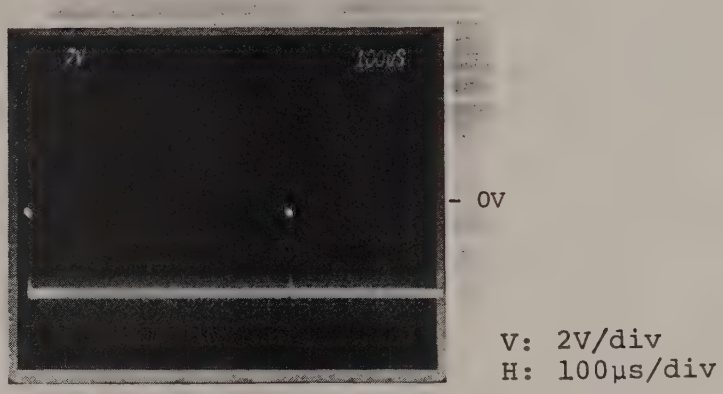


Fig. 3-116 TP ❻ Waveform of R-Z6

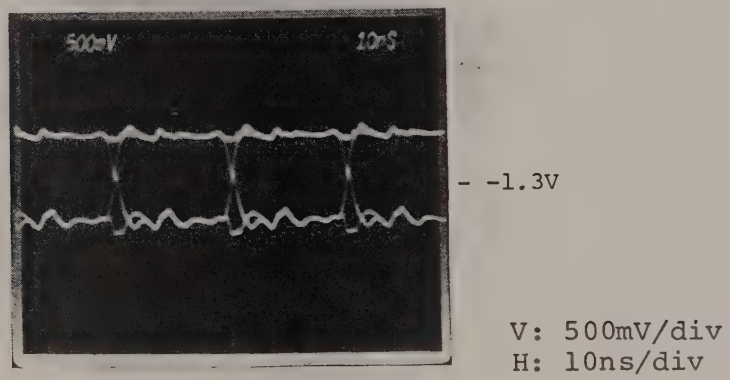


Fig. 3-117 TP ❼ Waveform of R-Z6

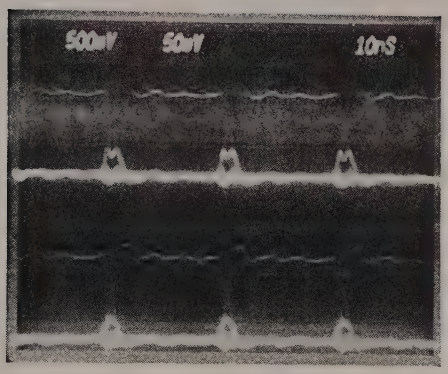


Fig. 3-118 TP ❾ , ❿ Waveform of R-Z6

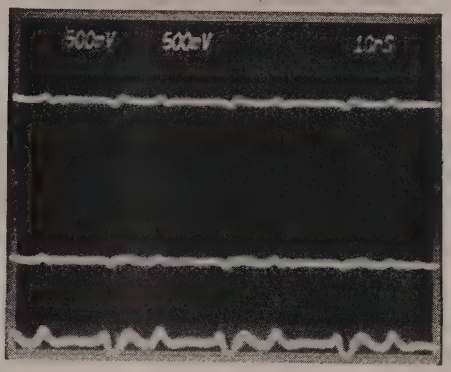


Fig. 3-119 TP ⓫ , ⓬ Waveform of R-Z6

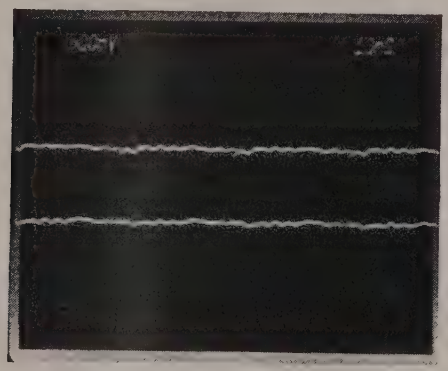
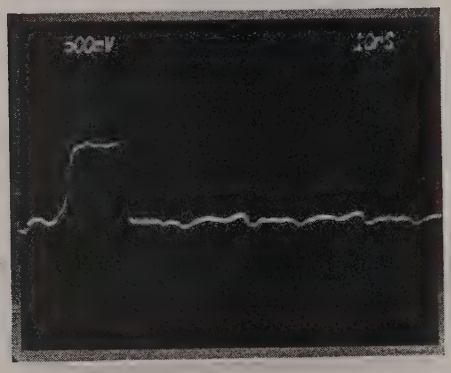


Fig. 3-120 TP ⓮ Waveform of R-Z6

If the above waveforms are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b)
BIT RATE	;	34368 (kb/s)
FORMAT	;	HDB3
ERROR ADD RATE	;	10^{-3}
ERROR ADD MODE	;	CODE

Check the TP ⓭ signal waveform using the oscilloscope.



V: 500mV/div
H: 10ns/div

Fig. 3-121 TP ⓭ Waveform of R-Z6

If the above waveform is OK, Z6 is OK. If not OK, perform the following adjustment.

1) R55, R61, R68, R75 Adjustment

Adjust each resistor for the minimum jitter by observing the signal of the ME520B(R) CLOCK MONITOR (rear panel) using the oscilloscope according to the following Table 3-26.

Table 3-26

RECOVERY BIT RATE	Adjustable R
704	R75
2048	R68
8448	R61
34368	R55

It not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

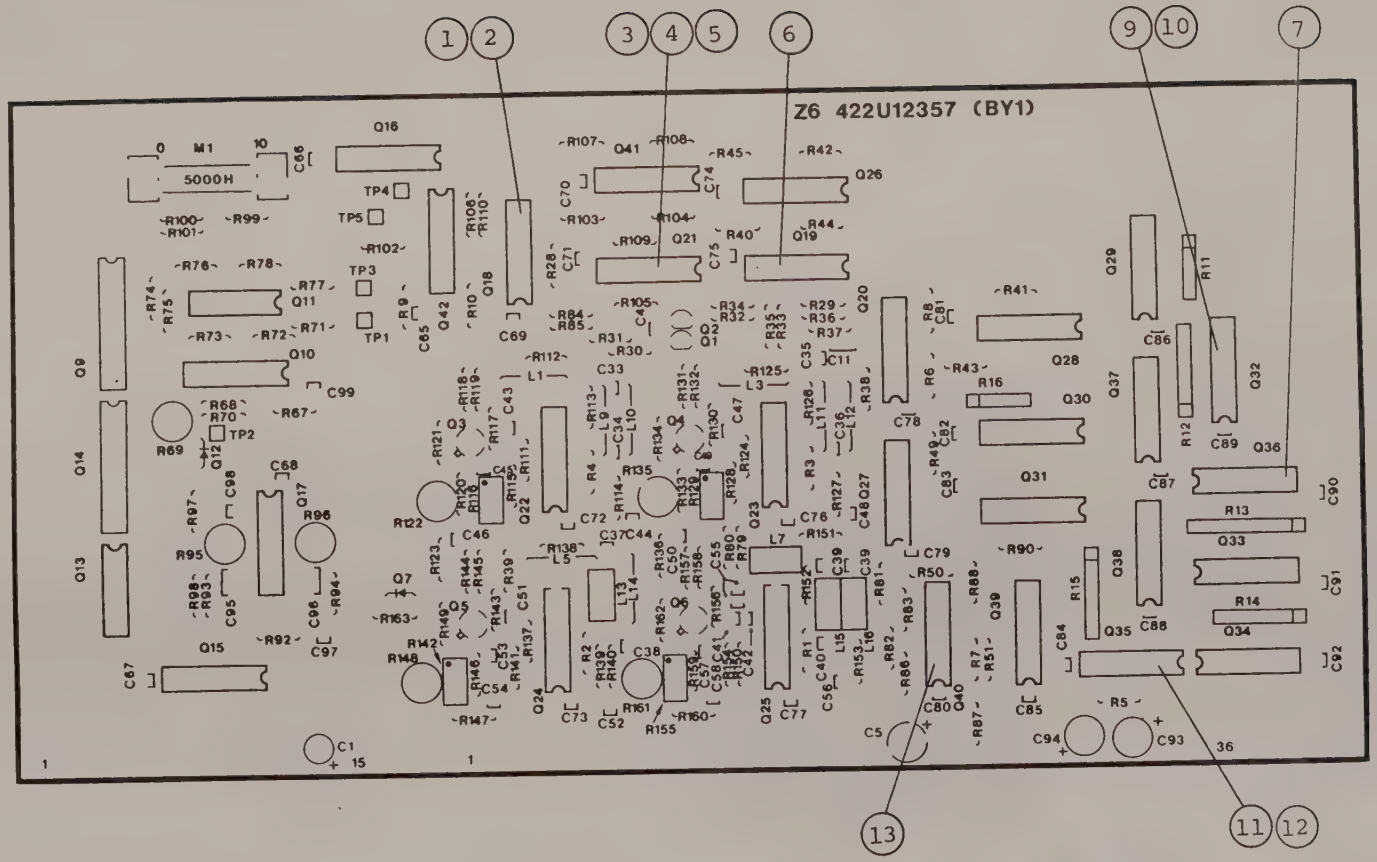
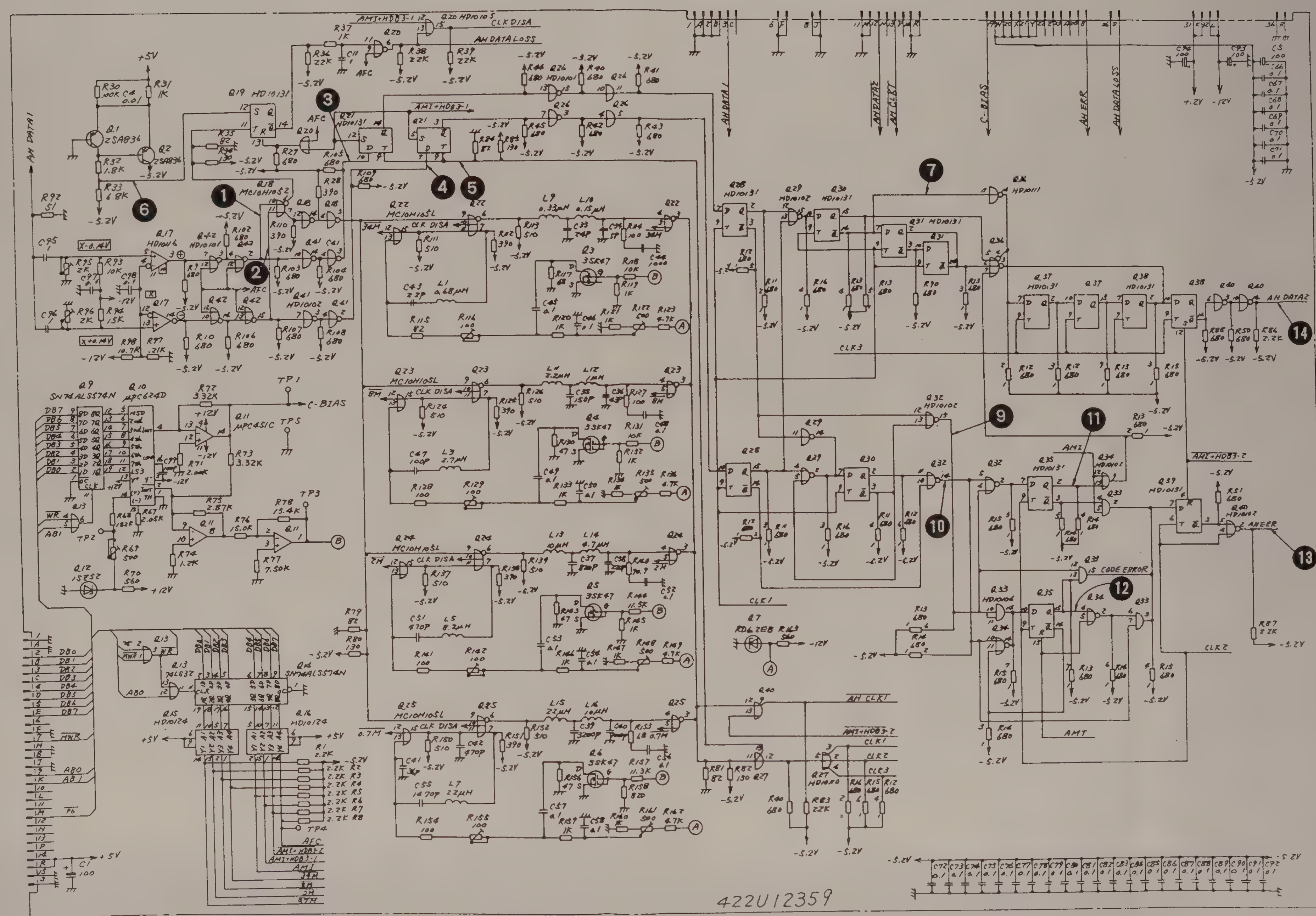


Fig. 3-122 Parts Layout of R-Z6 AMI/HDB3 P.C. Board 13



PC Board	422U12359
Parts List	44W84803

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE | M-1

APPROVED BY | DRAWN BY

TITLE R·Z6 AMI/HDB3 CIRCUIT DIAGRAM

DRAWING No 43W34338 1/1

ANRITSU CORP. 3-177/3-178

13

No 0021 1985 08

3.6.5 R-Z7 REGENERATOR 14 , R-Z8 WORD 15 P.C. Boards

(1) Circuit Description

Fig. 3-123 shows a block diagram of the R-Z7 and R-Z8 P.C. board.

The ERROR DETECTOR generates the same pattern as the transmitter sending pattern and is used as a reference. The data A and data B demultiplexed from the NRZ data are compared with the reference data A and data B bit-by-bit. Thus, bit errors are detected.

The reference pattern is generated by the same circuit of transmitter on both PRBS and WORD, and the zero insertion is also performed in the same way. However, synchronization is performed to match the sequence of the received data pattern and reference pattern. The error detection is performed after the synchronization is completed.

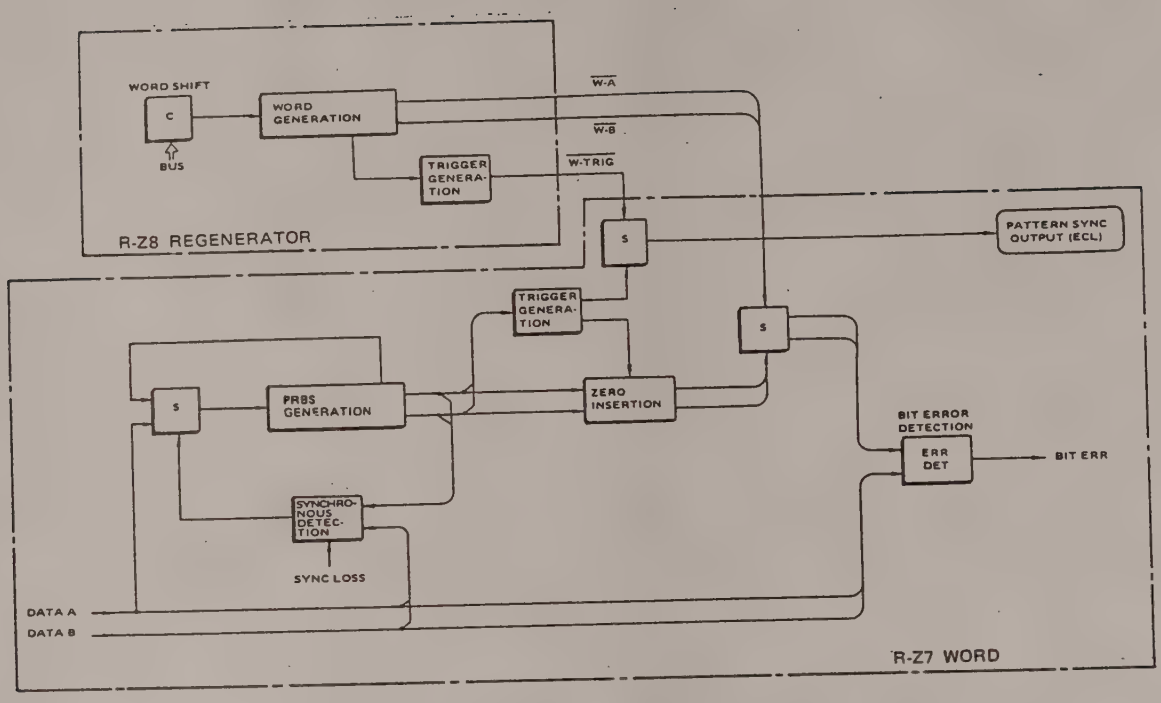


Fig. 3-123 Simplified Block Diagram of R-Z7 REGENERATOR and R-Z8 WORD

(a) PRBS Bit Error Detection

There are various methods of detecting binary errors.

The ME520B uses the measuring method shown in Fig. 3-123.

This method has the following features:

1) Bit-by-bit measurement is possible.

2) The pull-in time for synchronization of the sending and receiving patterns is short, and is almost entirely unrelated to the number of stages in the pseudo-random pattern.

Next, an outline will be given of the principle of measurement. When there is no input to the receiving unit, the switch will be "on" at the A side. If, at this time, a psuedo-random pattern is applied to the input, this signal will be read into the comparative pattern generator at the receiving side, consisting of a shift register and an exclusive OR circuit, resulting in generation of a pesudo-random pattern which is identical to that at the sending side.

The input pattern is compared with the pattern at the receiving side to detect any errors which are then incremented. If there are 32 consecutive error-free bits, the sending and receiving sides will be considered to be synchronized with each other, and the switch is then "on" at the B side. Measurement begins at this point. Also, if more than 10,000 erroneous bits are detected from among 30,000 clock bits once synchronization has been effected, the sending and receiving units will be considered to be out of synchronization. In such a case, the switch must be "on" at the A side and synchronization then recurs. Consequently, the error rate for the asynchronization threshold level is

$$\text{Error rate} = \frac{10,0000}{30,0000} = 3.33 \times 10^{-1}$$

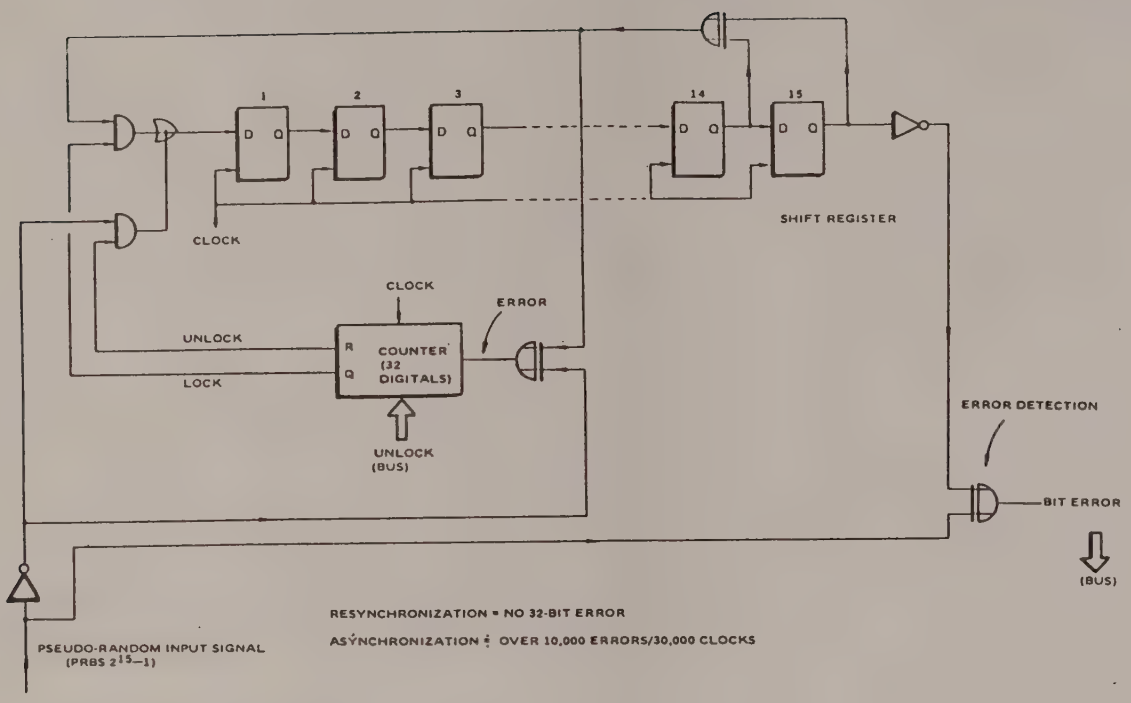


Fig. 3-124 PRBS Bit Error Detection Method (2^{15}-1 pattern)

(b) WORD Bit Error Detection (See Fig. 3-125)

This circuit generates a shift pulse by comparing received data with the REF data whenever an error occurs. The shift pulse shifts the REF data by 1 bit. This circuit compares the shifted data with the received data again, and regenerates a shift pulse when an error occurs. When no error is detected for 32 consecutive bits by comparing received data with the REF data, each data is assumed to be synchronized and generation of the shift pulse is prohibited (sync gain).

If more than 1,000 erroneous bits are detected from among 30,000 clock bits after synchronization has been effected, the sending unit and receiving unit will be considered to be out of synchronization.

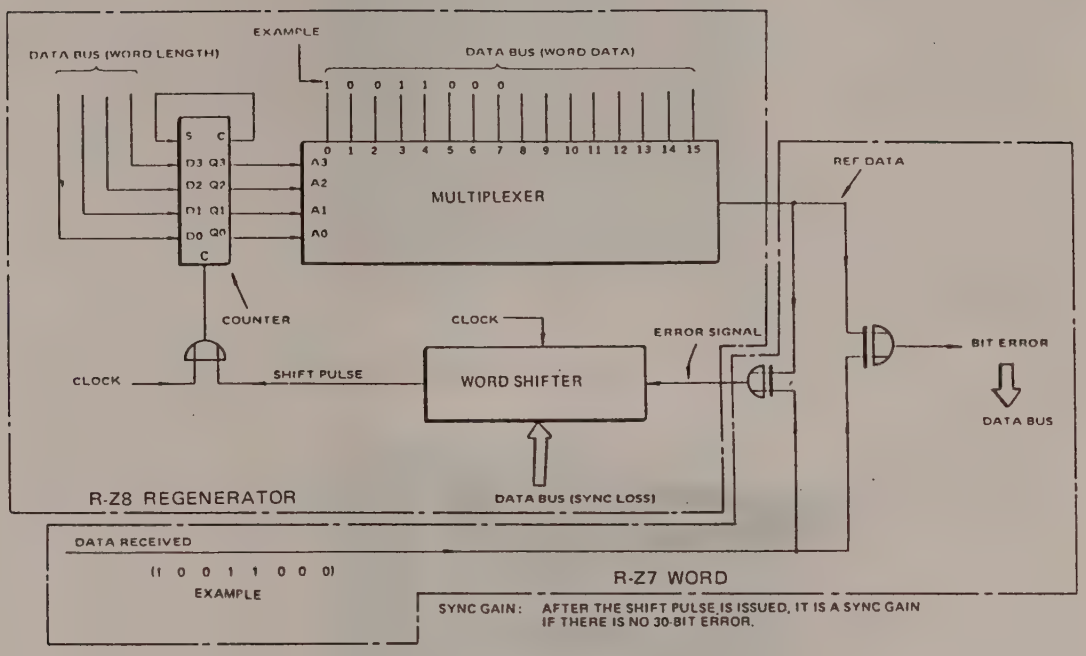


Fig. 3-125 WORD Bit Error Detection Method

(2) Troubleshooting and adjustment

A. R-Z7 P.C. Board

After lifting the R-Z7 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment.

(a)
BIT RATE	;	34368 (kb/s)
FORMAT	;	HDB3
PATTERN	;	$2^{10}-1$
ZERO SUB	;	8

Check the TP ❶ to TP ❽ signal waveforms using the oscilloscope.

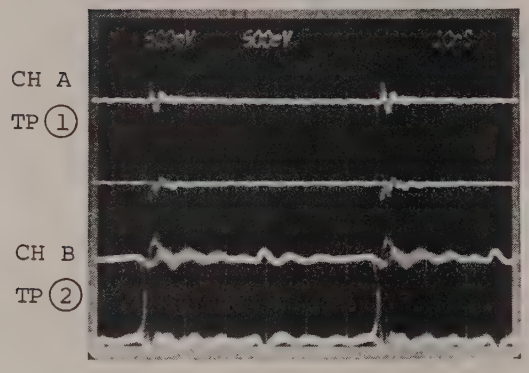


Fig. 3-126 TP ❶ , ❷ Waveform of R-Z7

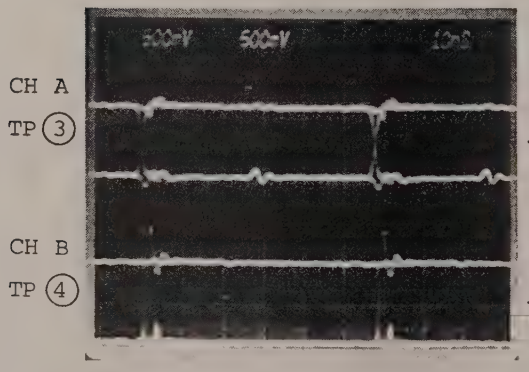


Fig. 3-127 TP ❸ , ❹ Waveform of R-Z7

Fig. 3-128 TP ❺ Waveform of R-Z7

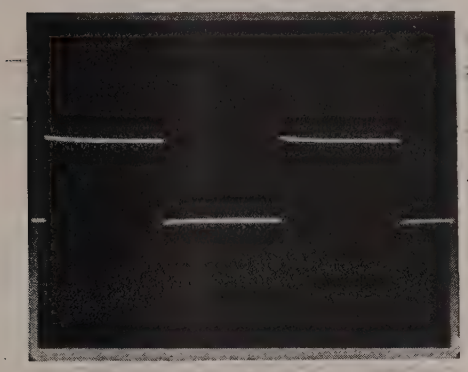


Fig. 3-129 TP ❻ Waveform of R-Z7

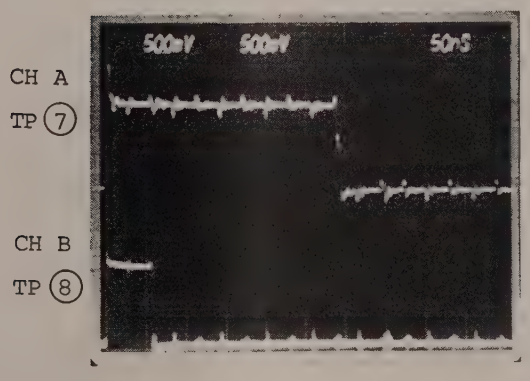


Fig. 3-130 TP ❼ , ❽ Waveform of R-Z7

If the above waveform is OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check the Q35 status according to the following Table 3-27 by changing the PRBS pattern.

Table 3-27

Pin No. / Pattern	STATUS Q35-12	Q35-11	Q35-6	Q35-5
$2^{10}-1$	H	L	H	L
$2^{15}-1$	H	H	H	L
$2^{23}-1$	H	H	L	H

(STATUS: ECL Level)

2) Check the Q18-9, Q19-9, and Q20-9 pin statuses according to the following Table 3-28 by changing the PRBS pattern.

Table 3-28

Pin No. / Pattern	STATUS Q18-9	Q19-9	Q20-9
$2^{10}-1$	H	H	L
$2^{15}-1$	H	L	H
$2^{23}-1$	L	H	H

(STATUS: ECL Level)

3) Check the Q38 and Q39 statuses according to the following Table 3-29 by changing the number for ZERO SUBSTITUTION. (When N is set, set N/2 in Q38 and Q39 in hexadecimal code.)

Table 3-39

	Q38 Pin No.				Q39 Pin No.			
ZERO SUB	12	11	6	5	12	11	6	5
0	L	L	L	L	L	L	L	L
8	L	L	H	L	L	L	L	L
16	L	L	L	H	L	L	L	L
24	L	L	H	H	L	L	L	L
32	L	L	L	L	H	L	L	L
40	L	L	H	L	H	L	L	L
120	L	L	H	H	H	H	L	L

(STATUS: ECL Level)

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

(b)

BIT RATE	;	34368 (kb/s)
FORMAT	;	HDB3
PATTERN	;	$2^{15}-1$
ERROR ADD RATE	;	10^{-3}
ERROR ADD MODE	;	BIT

Check the TP ❾ to TP ⓬ signal waveform using the oscilloscope.

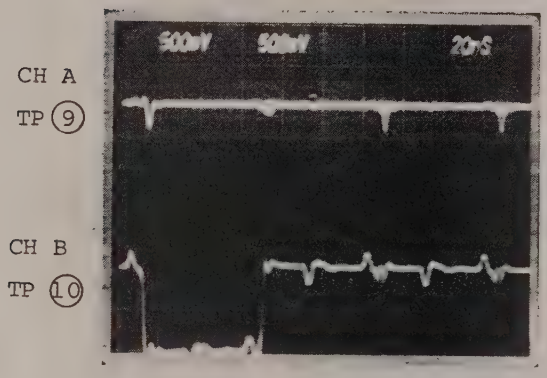


Fig. 3-131 TP ❾ , ❿ Waveform of R-Z7

Fig. 3-132 TP ⓫ , ⓬ Waveform of R-Z7

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(c) Check the following by observing the TP ⓭ waveform using the oscilloscope:

ECL low level for sync loss

ECL high level for sync

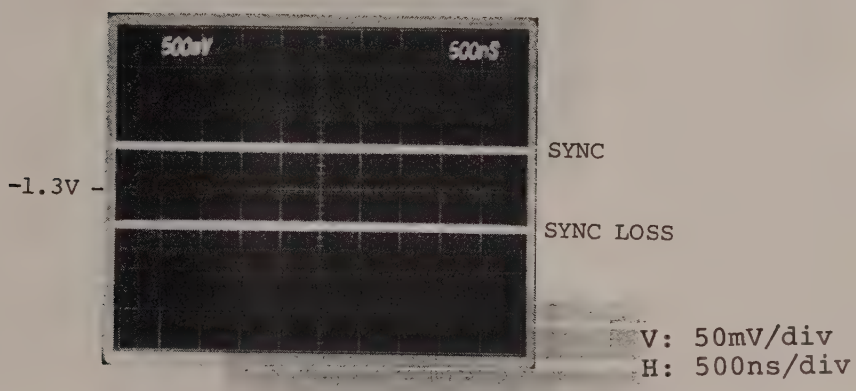


Fig. 3-133 TP ⓭ Waveform of R-Z7

If the above waveform is OK, Z7 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

B. R-Z8 P.C. Board

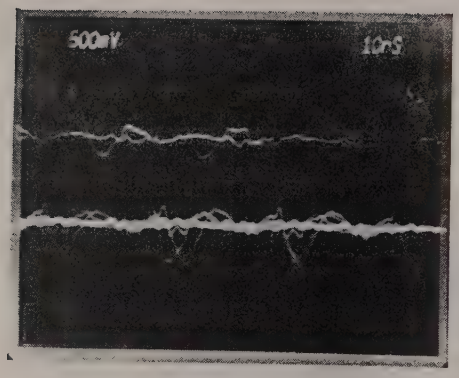
After lifting the R-Z8 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment. (See Fig. 3-82)

(a)

BIT RATE	;	34368 (kb/s)
FORMAT	;	HDB3
PATTERN	;	WORD T: 1100110 R: 1011010

Make the ME520B(T) and (R) WORD patterns differ from each other and set them under the sync loss condition.

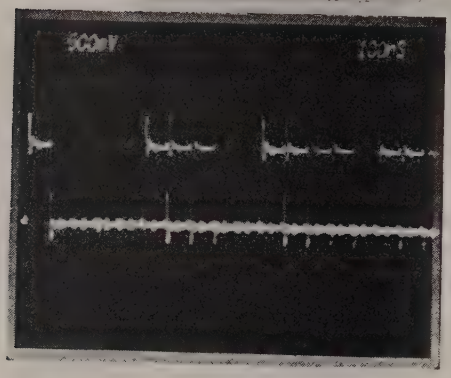
Check the TP ❶, TP ❷, and TP ❼ signal waveforms using the oscilloscope.



- -1.3V

V: 500mV/div
H: 10ns/div

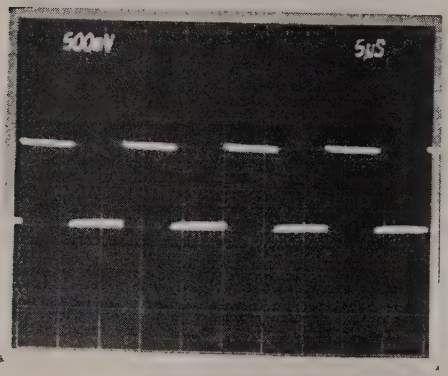
Fig. 3-134 TP ❶ Waveform of R-Z8



- -1.3V

V: 500mV/div
H: 100ns/div

Fig. 3-135 TP ❷ Waveform of R-Z8

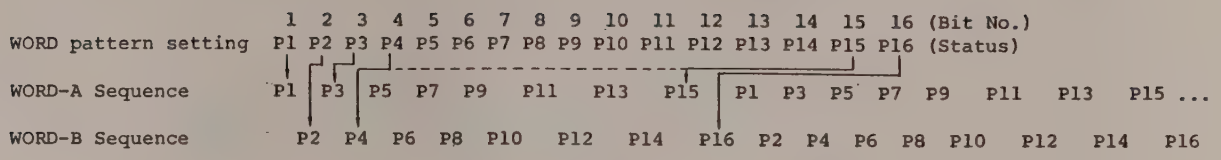


- -1.3V

V: 500mV/div
H: 5µs/div

Fig. 3-136 TP ❼ Waveform of R-Z8

Table 3-30



	Q, No.	Q23								Q24							
WORD-A	Pin No.	14	13	12	11	3	4	5	6	14	13	12	11	3	4	5	6
	Status	P1	P3	P5	P7	P9	P11	P13	P15	P1	P3	P5	P7	P9	P11	P13	P15
	Q, No.	Q21								Q22							
WORD-B	Pin No.	14	13	12	11	3	4	5	6	14	13	12	11	3	4	5	6
	Status	P2	P4	P6	P8	P10	P12	P14	P16	P2	P4	P6	P8	P10	P12	P14	P16

If not OK after performing the above test, troubleshoot the circuit(s) near the faulty test point.

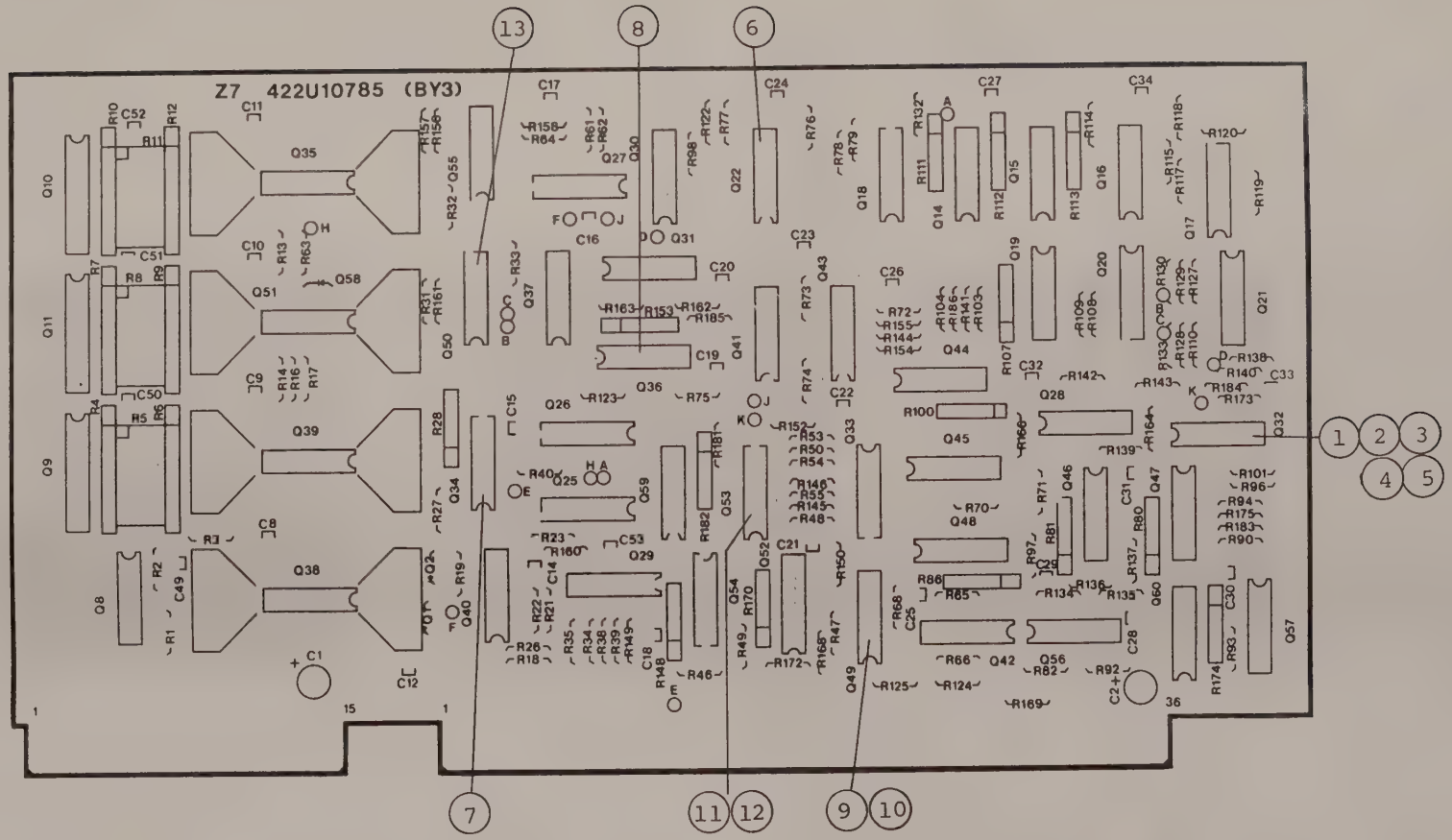


Fig. 3-141 Parts Layout of R-Z7 REGENERATOR P.C. Board 14

If the above waveforms are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b) [BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3
PATTERN ; WORD-10111010111001]

Check the TP ❸ to TP ❻ and TP ❽ to TP ❿ signal waveforms using the oscilloscope.

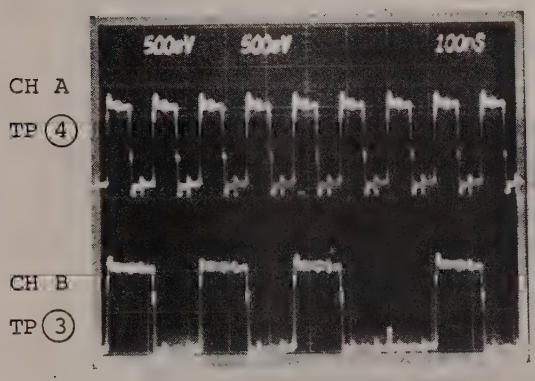


Fig. 3-137 TP ❸ , ❹ Waveform of R-Z8

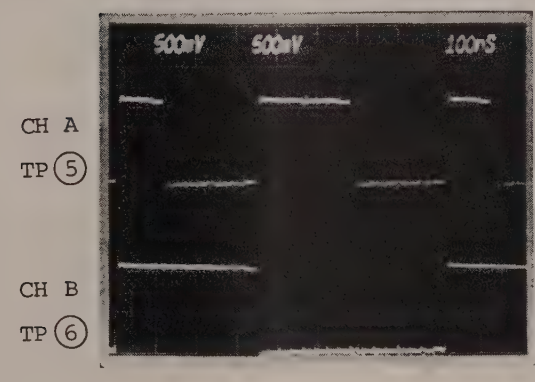


Fig. 3-138 TP ❺ , ❻ Waveform of R-Z8

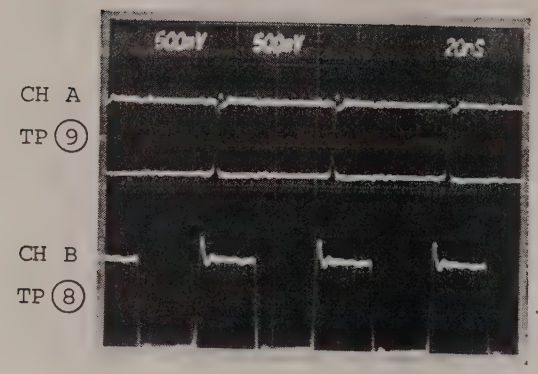


Fig. 3-139 TP ❽, ❾ Waveform of R-Z8

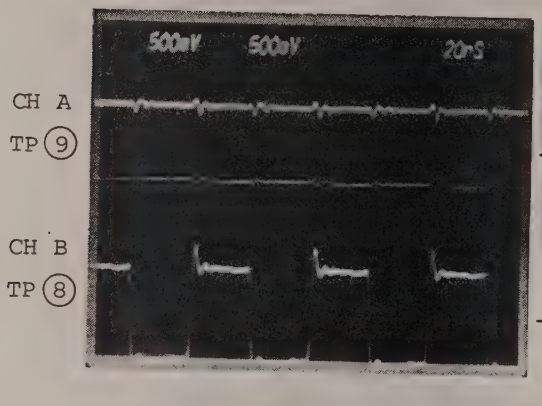


Fig. 3-140 TP ❽, ❿ Waveform of R-Z8

If the above waveforms are OK, Z8 is OK. If not OK, perform the following test.

1) Check the Q21 to Q24 statuses according to the following Table 3-30 for each WORD pattern setting.

3.6.6 R-Z8 WORD 15, R-Z9 PLL 16, R-Z10 JITTER 17 P.C. Boards

(1) Circuit Description

Fig. 3-143 shows a Block Diagram of R-Z8, R-Z9, and R-Z10 jitter measurement circuit.

The jitter measurement is performed to detect a change of the phase difference between two signals as compared with the received and reference clock signals by the phase detector (PD).

There are two reference clock signals, which are the internal and external clock signals.

The internal reference clock signal is the signal which is jitter removed from the received clock signal by the PLL loop.

Either the internal or external reference clock signal is selected for the measurement.

The peak detection is performed through the internal filter for the detected jitter element.

The high speed comparator, D/A converter, and up/down counter measures the jitter peaks. And the peak voltage is A/D-converted into a number of pulses.

The jitter hit is detected by presetting the jitter hit threshold and comparing the jitter amplitude with the threshold level.

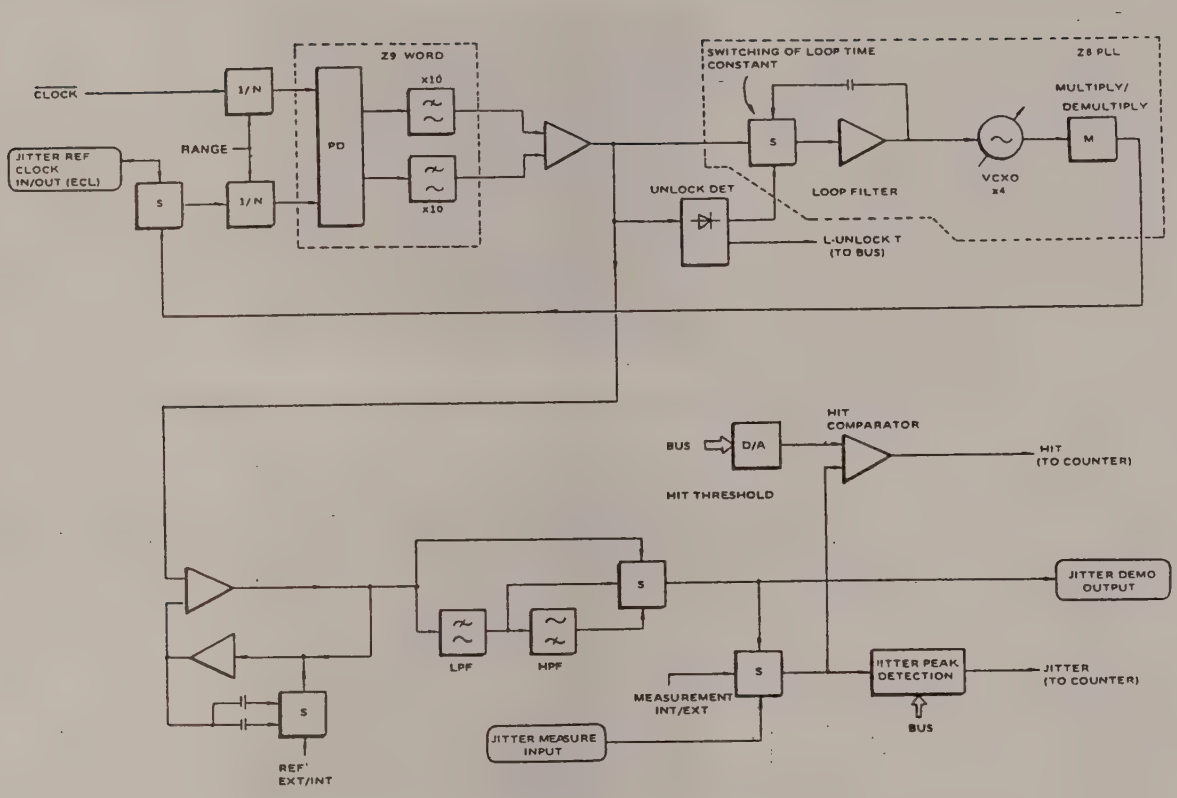


Fig. 3-143 Block Diagram of R-Z8 WORD, R-Z9 PLL, and R-Z10 JITTER

43W34339 1/1

REVISIONS

APPLICATION

AFC (37-18)

422U10785

ME520B

PC Board	422U10785
Parts List	44W84804

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY		TRACED BY		SCALE	
APPROVED BY		DRAWN BY			

TITLE R-27 REGENERATOR CIRCUIT DIAGRAM

DRAWING No 43W34339

14

ANRITSU CORP.

3-195

DEP

No. 0021 1985-08

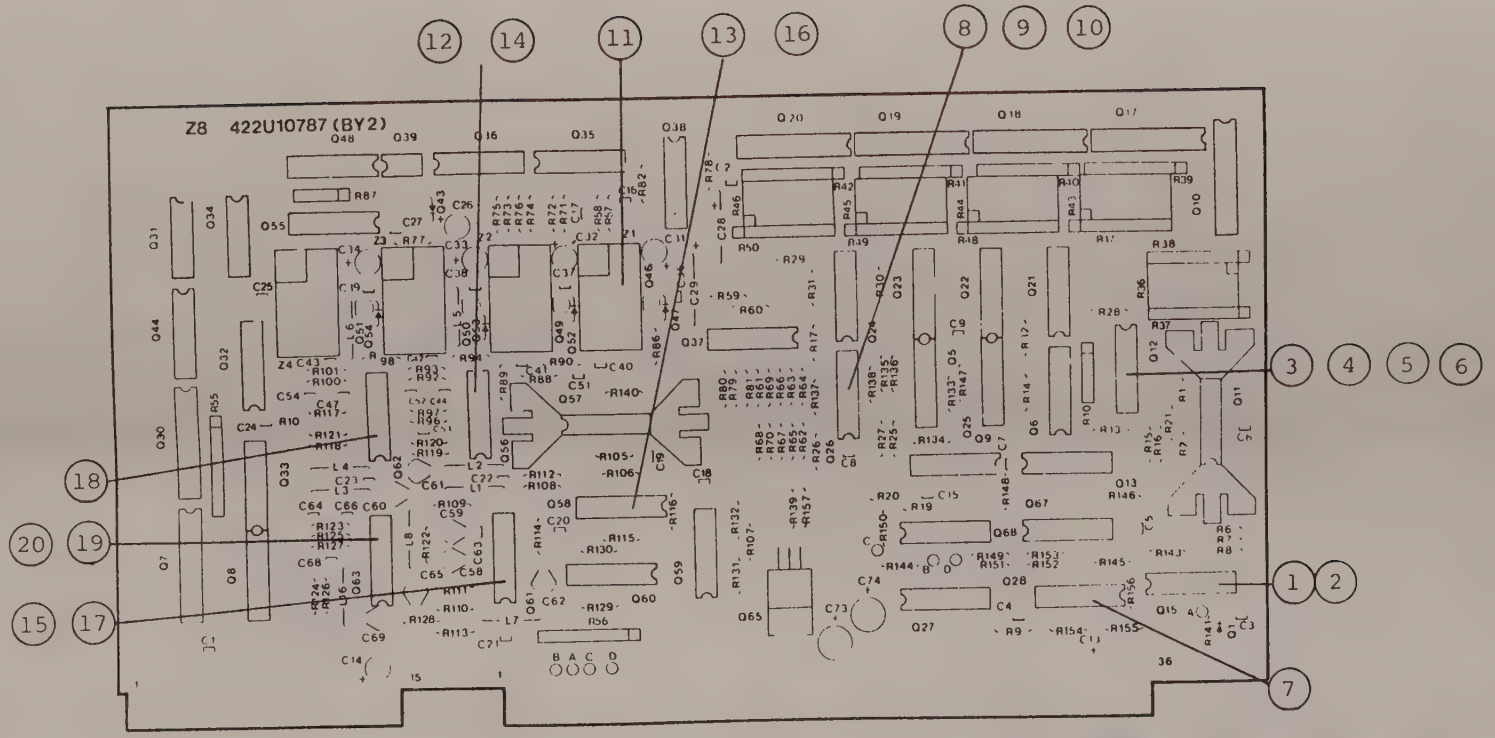


Fig. 3-142 Parts Layout of R-Z8 WORD P.C. Board 15

43W34340 1/2

APPLICATION

REVISIONS

PC Board	422U10787
Parts List	44W84805

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE
APPROVED BY	DRAWN BY	

TITLE: R-28 WORD CIRCUIT DIAGRAM

DRAWING No. 43W34340 1/2

15

DEP

ANRITSU CORP.

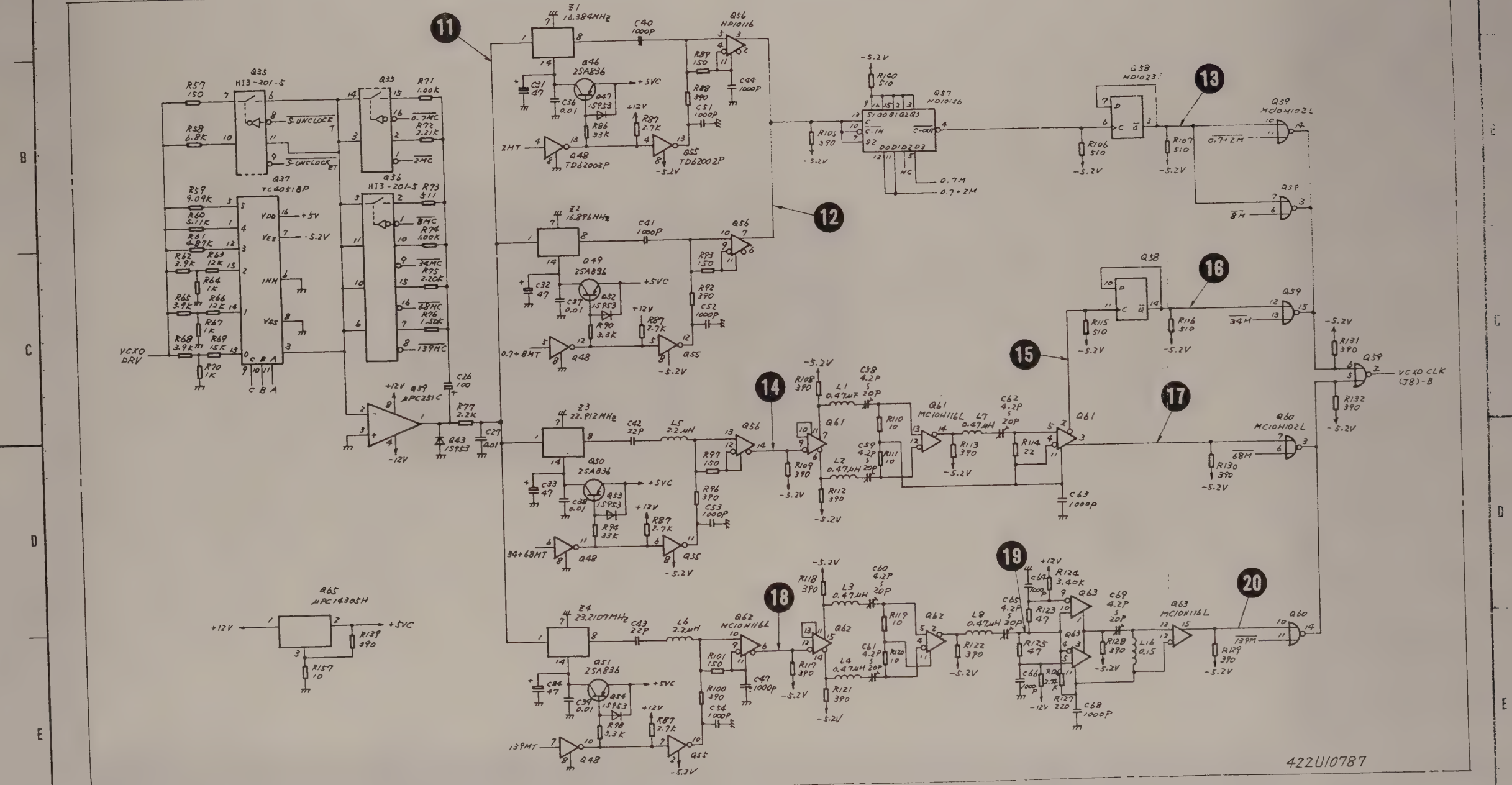
3-197/3-198

No. 0023-1985.08

43W34340 3/2

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

TITLE: R-Z8 WORD CIRCUIT DIAGRAM

DRAWING No. 43W34340 3/2

15

DEP

ANRITSU CORP.

3-199/3-200

No. 0023-1985.08

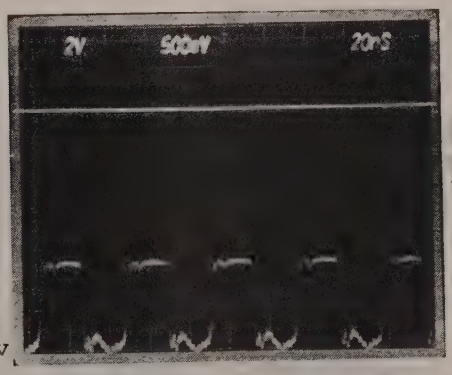
(2) Troubleshooting and Adjustment

A. R-Z8 P.C. Board (See Circuit Diagram 15 in paragraph 3.6.5)

After lifting the R-Z8 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment.

(a) [BIT RATE ; 139264 (kb/s)
FORMAT ; CMI]

Check the TP ⑪ , ⑱ , ⑲ to TP ⑳ signal waveforms using the oscilloscope.



CH A
TP ⑪
V: 2V/div

CH B
TP ⑱
V: 500mV/div

- -1.3V

H: 20ns/div

Fig. 3-144 TP ⑪ , ⑱ Waveform of R-Z8

CH A
TP ⑳

- -1.3V

CH B
TP ⑲

- -1.3V

V: 500mV/div
H: 5ns/div

Fig. 3-145 TP ⑲ , ⑳ Waveform of R-Z8

If the above waveforms are OK, proceed to the next step without performing the following adjustment. If not OK, perform the following adjustment.

1) Adjustment

Finely adjust C60, C61, C65, and C69 for the minimum jitter by observing the TP ⑳ waveform using the oscilloscope.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(b) [BIT RATE ; 704 (kb/s)
FORMAT ; AMI]

Check the TP ⑫ and TP ⑬ signal waveforms using the oscilloscope.

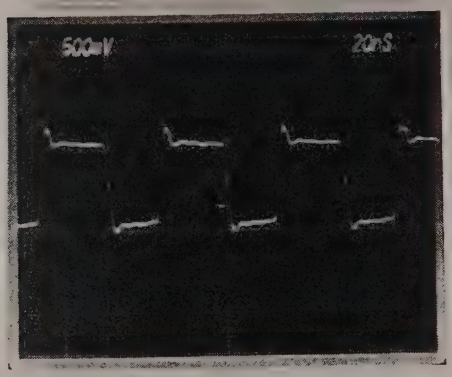


Fig. 3-146 TP ⑫ Waveform of R-Z8

Fig. 3-147 TP ⑬ Waveform of R-Z8

If the above waveforms are OK, proceed to the next step without performing the following test. If not OK, perform the following test.

1) Check whether the Q48-5 pin status is set to the TTL high level and the Q57-5 and Q57-11(12) pin statuses are set to the ECL high level.

If not OK after performing the above test, trouble-shoot the circuit(s) near the faulty test point.

(c) [BIT RATE ; 34368 (kb/s)
FORMAT ; AMI]

Check the TP ⓮ , to TP ⓯ , ⓰ signal waveforms using the oscilloscope.

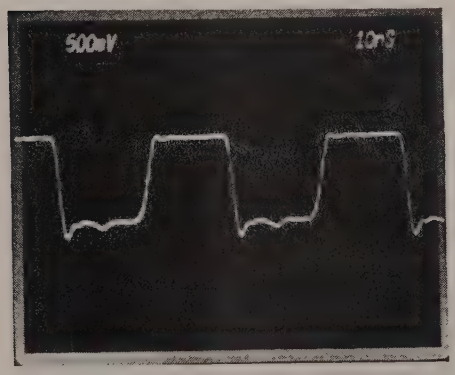


Fig. 3-148 TP ⓮ Waveform of R-Z8

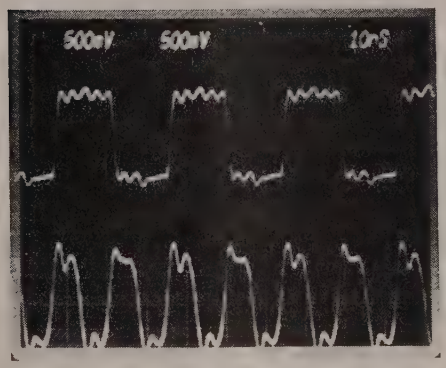


Fig. 3-149 TP ⓯ , ⓰ Waveform of R-Z8

If the above waveform are OK, proceed to the next step without performing the following adjustment. If not OK, perform the following adjustment.

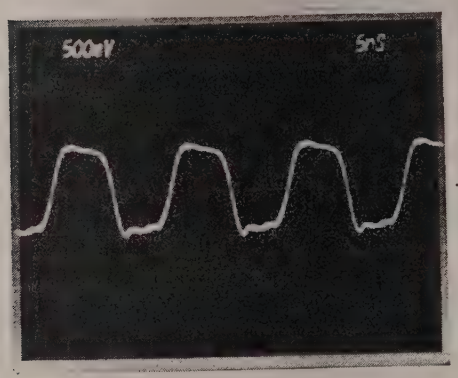
1) Adjustment

Finely adjust the C58, C59, and C62 for the minimum jitter by observing the TP ⓯ waveform using the oscilloscope.

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

(d) [BIT RATE ; 68736 (kb/s)
FORMAT ; CMI]

Check the TP ⓱ signal waveform using the oscilloscope.



V: 500mV/div
H: 5ns/div

Fig. 3-150 TP ⓱ Waveform of R-Z8

If the above waveform is OK, Z8 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

B. R-Z9 P.C. Board

After lifting the R-Z9 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment. (See Fig. 3-82)

(a) [BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3]

Add the following jitter to the ME520B(T) output signal:

Jitter Amplitude; 1.000 UI_{p-p}
Jitter frequency; 1 kHz

The ME520B(R) jitter measurement range should be "1".

Check the TP ❶ and TP ❷ signal waveforms using the oscilloscope.

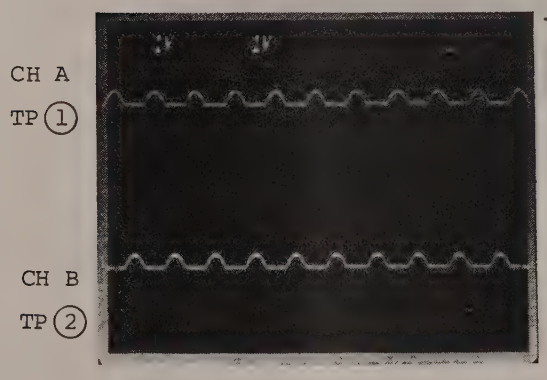


Fig. 3-151 TP ❶ , ❷ Waveform of R-Z9

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b) [BIT RATE ; 34368 (kb/s)
FORMAT ; HDB3]

The bit rate and format are the same as in Step (a).

ME520B(T) jitter added signal:

Jitter Amplitude; 5.00 UI_{p-p}
Jitter frequency; 1 kHz

The ME520B(R) jitter measurement range should be "10".

Check the TP ❸ and TP ❹ signal waveforms.

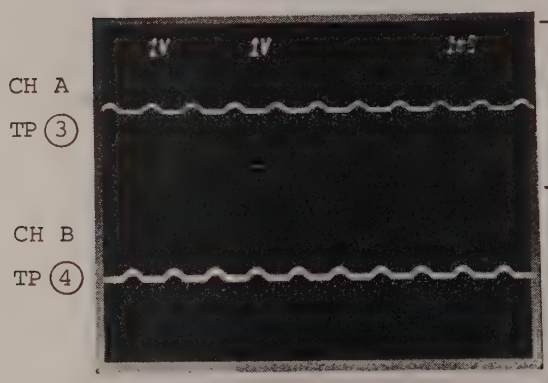


Fig. 3-152 TP ❸ , ❹ Waveform of R-Z9

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

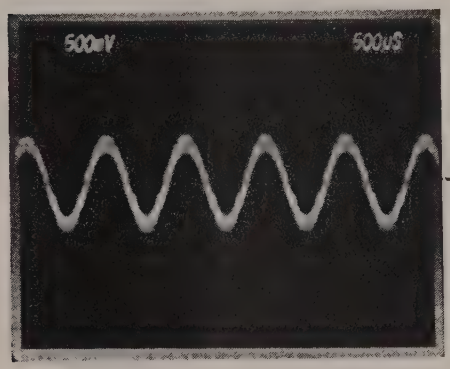
(c) [BIT RATE ; 68736 (kb/s)
FORMAT ; CMI]

ME520B(T) Jitter:

Jitter Amplitude; 1.00 UI_{p-p}
Jitter frequency; 1 kHz

The ME520B(R) jitter measurement range should be "1".

Check the TP ❺ signal waveform using the oscilloscope.



V: 500mV/div
H: 500μs/div

Fig. 3-153 TP ❺ Waveform of R-Z9

If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(d) Make sure that the TP ❻ voltage is approximately -3.8 V.

If the above value is OK, Z9 is OK. If not OK, perform the following test.

1) Adjustment

[BIT RATE ; 704 (kb/s)
FORMAT ; NRZ]

i) Add the following jitter to the ME520B(T) output signal:

Jitter Amplitude: 1,000 UI_{p-p}
Jitter frequency: 1 kHz

ii) Measure the jitter UI by setting the ME520B(R) jitter measurement range to "1".

iii) Adjust the R18 and R20 to ensure that the ME520B(R) jitter measurement value is 1.00.

iv) Then, by changing the bit rate, adjust each registor corresponding to each bit rate in the same way according to the following Table 3-31.

Table 3-31

BIT RATE (kb/s)	Adjustable R
704	R180, R181
2048	R182, R183
8448	R184, R185
34368	R186, R187
68736 139264	R188, R189

v) Add the following jitter to the ME520B(T) output signal:

Jitter Amplitude; 10.00 UI_{p-p}
Jitter frequency; 1 kHz

vi) Measure the jitter UI by setting the ME520B(R) jitter measurement range to "10".

vii) Adjust the following resistor value to ensure that the ME520B(R) jitter measurement value is 10.00 according to the following Table 3-32.

Table 3-32

BIT RATE (kb/s)	Adjustable R
704	R190, R191
2048	R192, R193
8448	R194, R195
34368	R196, R197
68736 139264	R198, R199

If not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point

C. R-Z10 P.C. Board

After lifting the R-Z10 P.C. Board using the R-Z1 extender, perform troubleshooting and adjustment. (See Fig. 3-82)

(a) [BIT RATE ; 68736 (kb/s)
FORMAT ; CMI

Jitter condition]

Amplitude : 0.500 UI_{p-p}
Range : 1

Check the TP ❶ , ❸ , ❹ , and ❻ signal waveforms using the oscilloscope.

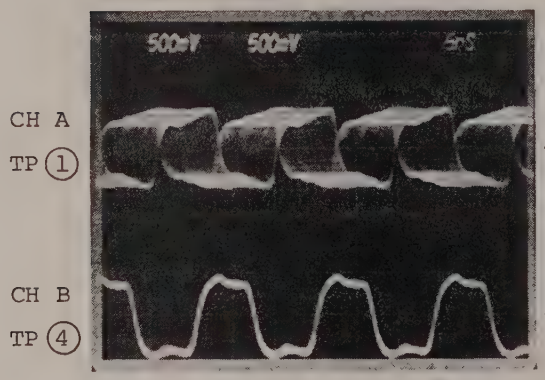


Fig. 3-154 TP ❶ , ❹ Waveform of R-Z10.

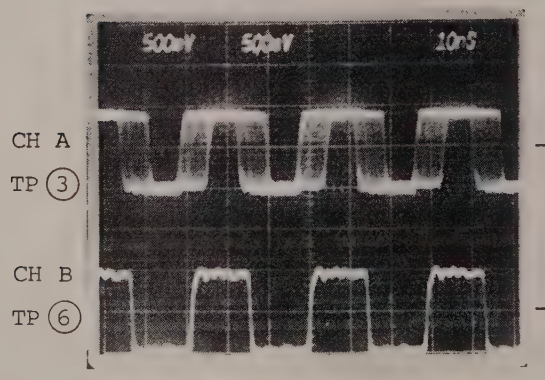


Fig. 3-155 TP ❸ , ❻ Waveform of R-Z10

If the above waveforms are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b)
BIT RATE ; 68736 (kb/s)
FORMAT ; CMI
Jitter condition
Amplitude : 5.00 UI_{p-p}
Range : 10

Check the TP ❷ and TP ❺ signal waveforms using the oscilloscope.

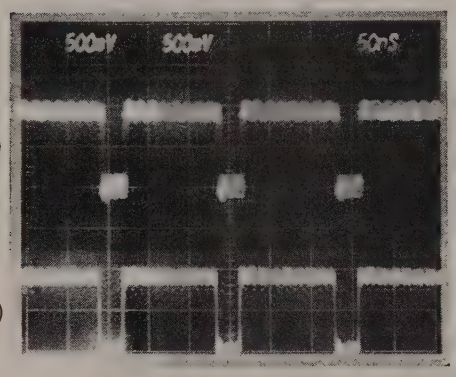
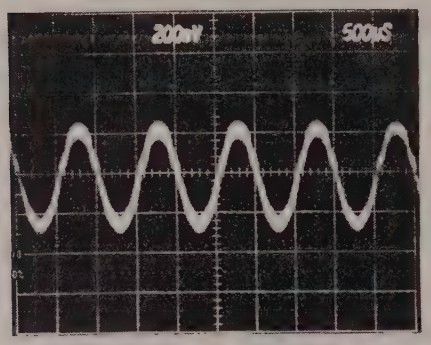


Fig. 3-156 TP ❷, ❺ Waveform of R-Z10

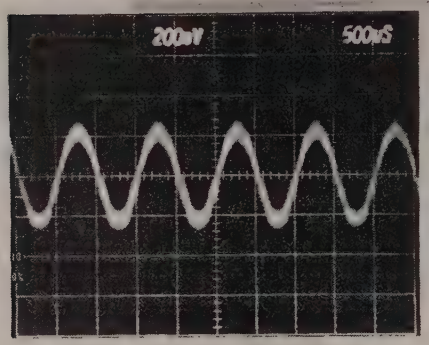
If the above waveform is OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(c) Make the same setting as (a) and check the TP ❼ to TP ⓬ and TP ⓮ to TP ㉓ signal waveforms.



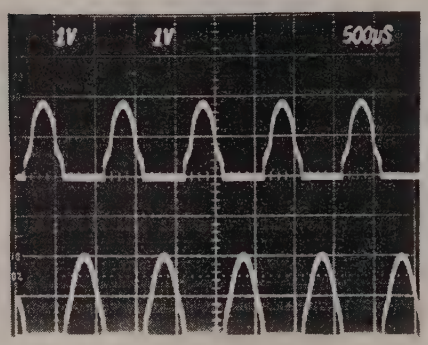
V: 200mV/div
H: 500µs/div

Fig. 3-157 TP ❼ Waveform of R-Z10



V: 200mV/div
H: 500µs/div

Fig. 3-158 TP ❽ Waveform of R-Z10



V: 1V/div
H: 500µs/div

Fig. 3-159 TP ❾ , ❿ Waveform of R-Z10

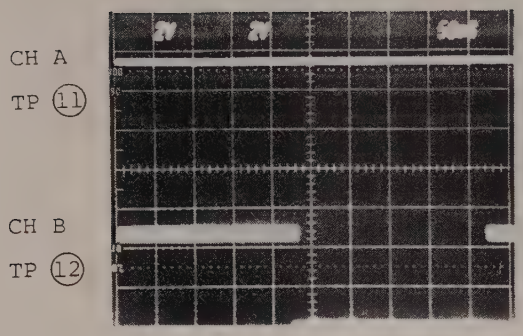


Fig. 3-160 TP ⓫ , ⓬ Waveform of R-Z10

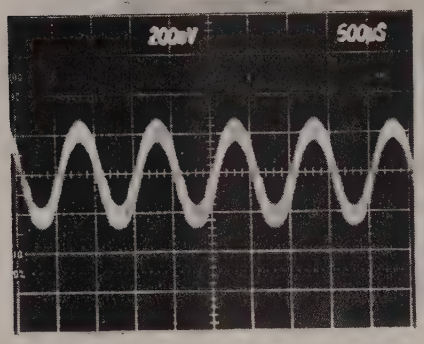


Fig. 3-161 TP ⓮ Waveform of R-Z10

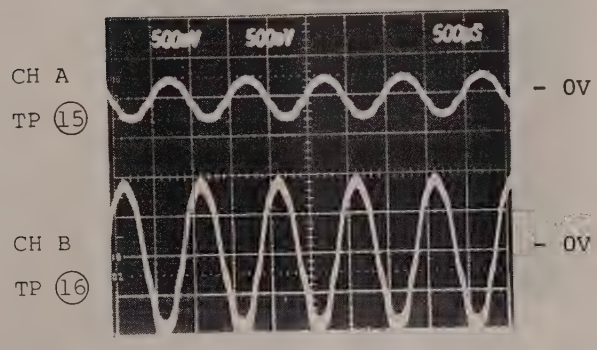
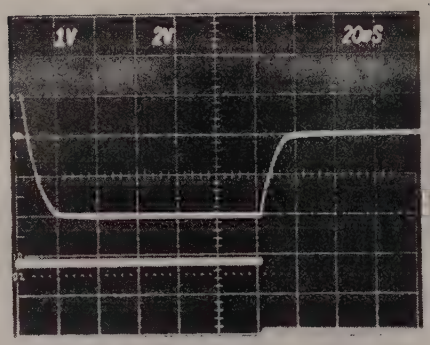


Fig. 3-162 TP ⓯ , ⓰ Waveform of R-Z10

CH A
TP ⑰
V: 1V/div

CH B
TP ⑲
V: 2V/div

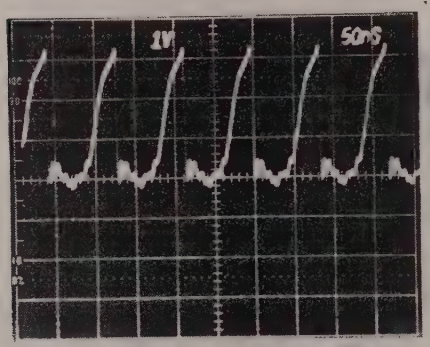


- 0V

- 0V

H: 20ms/div

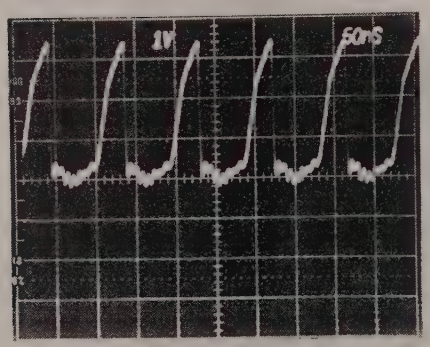
Fig. 3-163 TP ⑰ , ⑲ Waveform of R-Z10



- 0V

V: 1V/div
H: 50ns/div

Fig. 3-164 TP ⑱ Waveform of R-Z10



- 0V

V: 1V/div
H: 50ns/div

Fig. 3-165 TP ⑳ Waveform of R-Z10

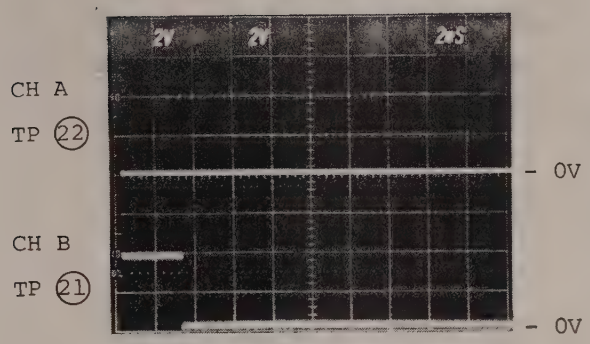


Fig. 3-166 TP ㉒ , ㉑ Waveform of R-Z10

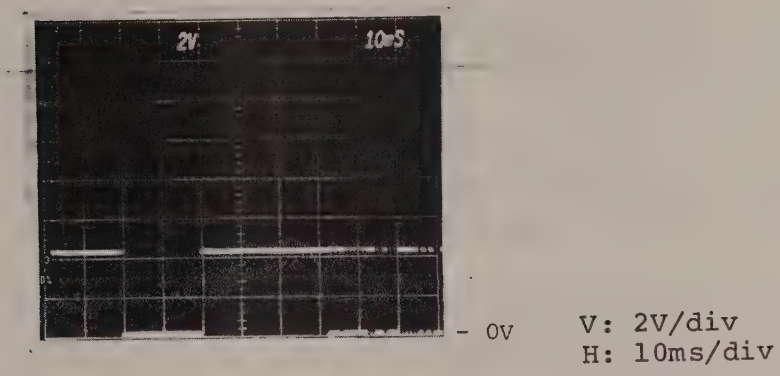


Fig. 3-167 TP ㉓ Waveform of R-Z10

If the above waveforms are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(d) Make sure that the TP ㉔ and TP ㉕ voltages are listed in the following Table 3-33 when changing the ME520B(R) jitter hit threshold value. In this case, the jitter measurement range should be "1".

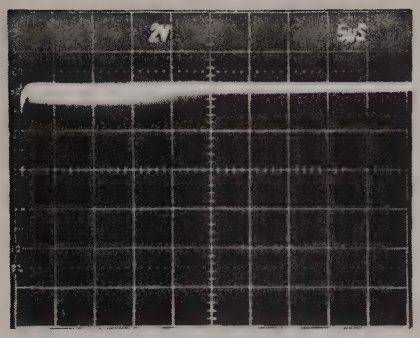
Table 3-33

	HIT THRESHOLD		
	0.5 UI_{p-p}	0.2 UI_{p-p}	0.1 UI_{p-p}
TP ㉔	-1.8 V	-0.75 V	-0.4 V
TP ㉕	+1.8 V	+0.75 V	+0.4 V

If the above values are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(e)
BIT RATE ; 68736 (kb/s)
FORMAT ; CMI
Jitter condition
Amplitude : 0.500 UI_{p-p}
frequency : 1
Range : 1
Hit Threshold: 0.200 UI_{p-p}

Check the TP ㉖ signal waveform using the oscilloscope.



V: 2V/div
H: 5μs/div

Fig. 3-168 TP ㉖ Waveform of R-Z10

If the above waveform is OK, Z10 is OK. If not OK, perform the following adjustment.

1) Adjustment

i) Set the ADDITIONAL FUNCTION-G switch on the rear panel of the ME520B(R) to "0".

ii) Then, input the following signal to the JITTER MEASURE INPUT terminal.

frequency : 1 kHz, sine wave
Amplitude : 1.00 V/p-p

iii) Set the ME520B(R) jitter measurement range to "1" and adjust the R78 to ensure that the displayed value is 1.000 PP when measuring the jitter UI_{p-p}

iv) After the adjustment i) to iii) measure the jitter UI (+p), (-p) and adjust the R73 to ensure that the displayed value is 0.500 +p, 0.500 -p.

v) Repeatedly set the ADDITIONAL FUNCTION-G switch on the rear panel of the ME520B(R) to "1".

```
BIT RATE ;  34368 (kb/s)
FORMAT   ;  HDB3
Jitter condition
  Amplitude : 1.000 UIp-p
  frequency : 1 kHz
  Range     : 1
```

vi) Adjust the R36 by observing the JITTER DEMOD output signal of the ME520B(R) rear panel using the oscilloscope so as to obtain an amplitude of 1 V/p-p.

vii)
```
BIT RATE ;  34368 (kb/s)
FORMAT   ;  HDB3
Jitter measurement condition
  frequency : 1 kHz
  Range     : 1
```

viii) Set the ME520B(R) JITTER HIT THRESHOLD to 0.400.

ix) Make adjustments to ensure that the input signal jitter amplitude is within 0.797 to 0.803 (UI_{p-p}).

x) Set the ME520B(R) JITTER DISPLAY MODE in the HIT COUNT mode.

xi) Set the measurement "ON" status by pressing the ME520B(R) MEASURE START switch.

xii) Adjust the R100 so that the jitter hit count display cannot be incremented when the input signal jitter amplitude is less than 0.800 (UI_{p-p}) and so that the display can start incrementing when the jitter amplitude exceeds 0.800 (UI_{p-p}).

It not OK after performing the above adjustment, troubleshoot the circuit(s) near the faulty test point.

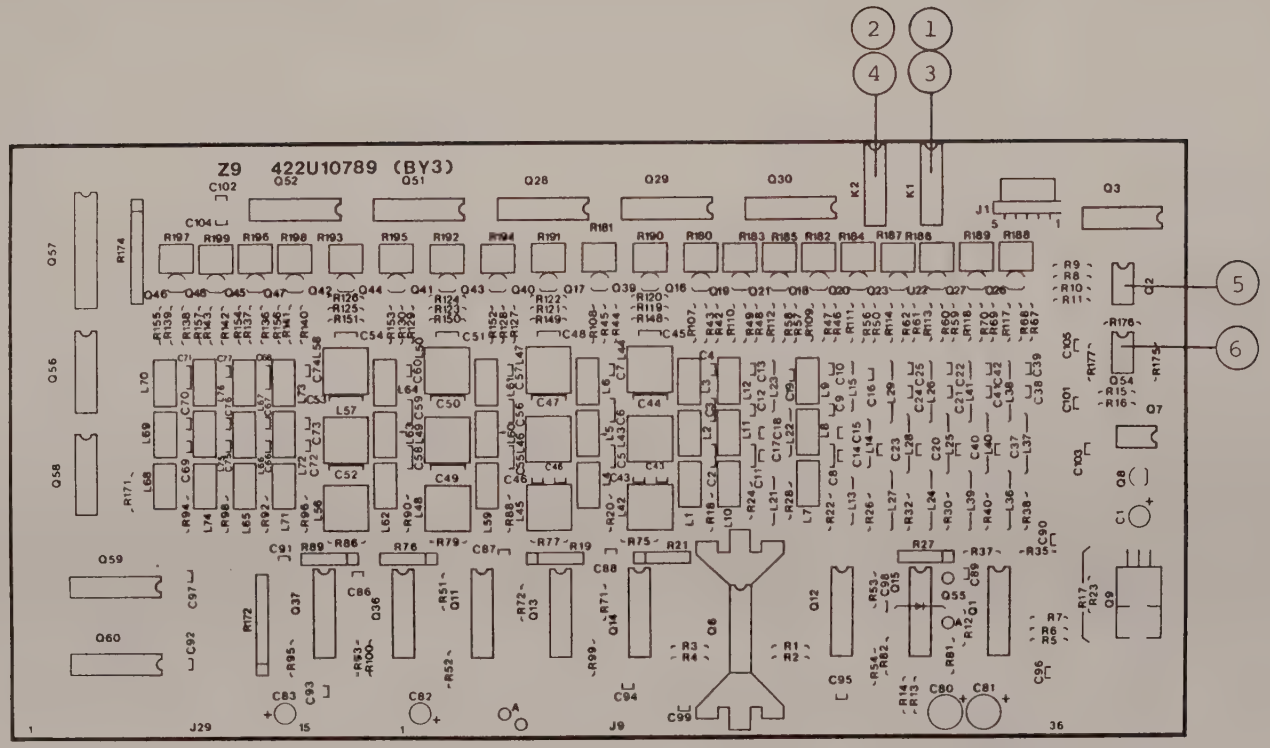
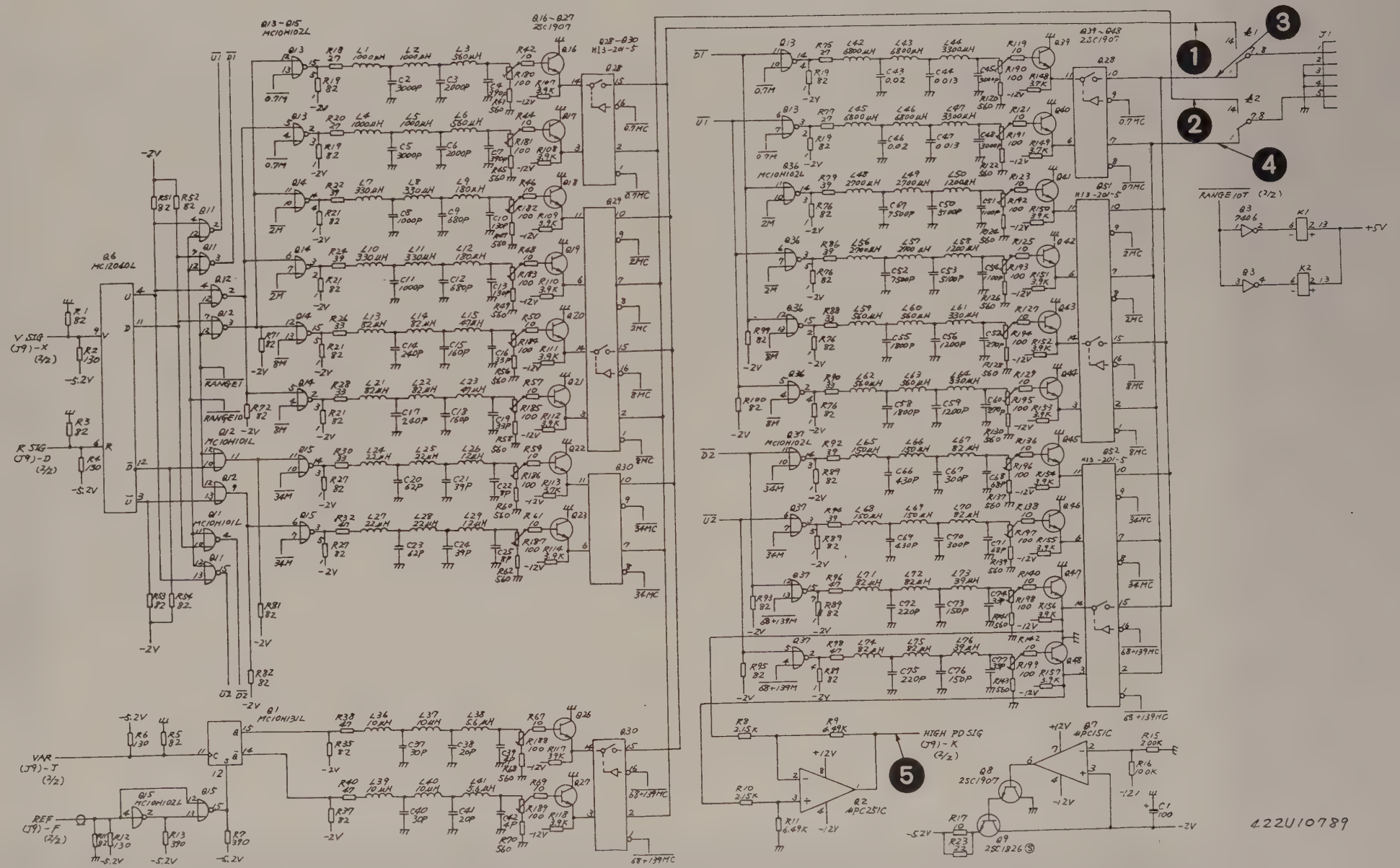


Fig. 3-169 Parts Layout of R-Z9 PLL P.C. Board 16

43W34341 1/2

APPLICATION

REVISIONS



422U10789

PC Board	422U10789
Parts List	44W84806

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE :

APPROVED BY | DRAWN BY

TITLE: R-Z9 PLL CIRCUIT DIAGRAM

DRAWING No. 43W34341 1/2

16

DEP

ANRITSU CORP.

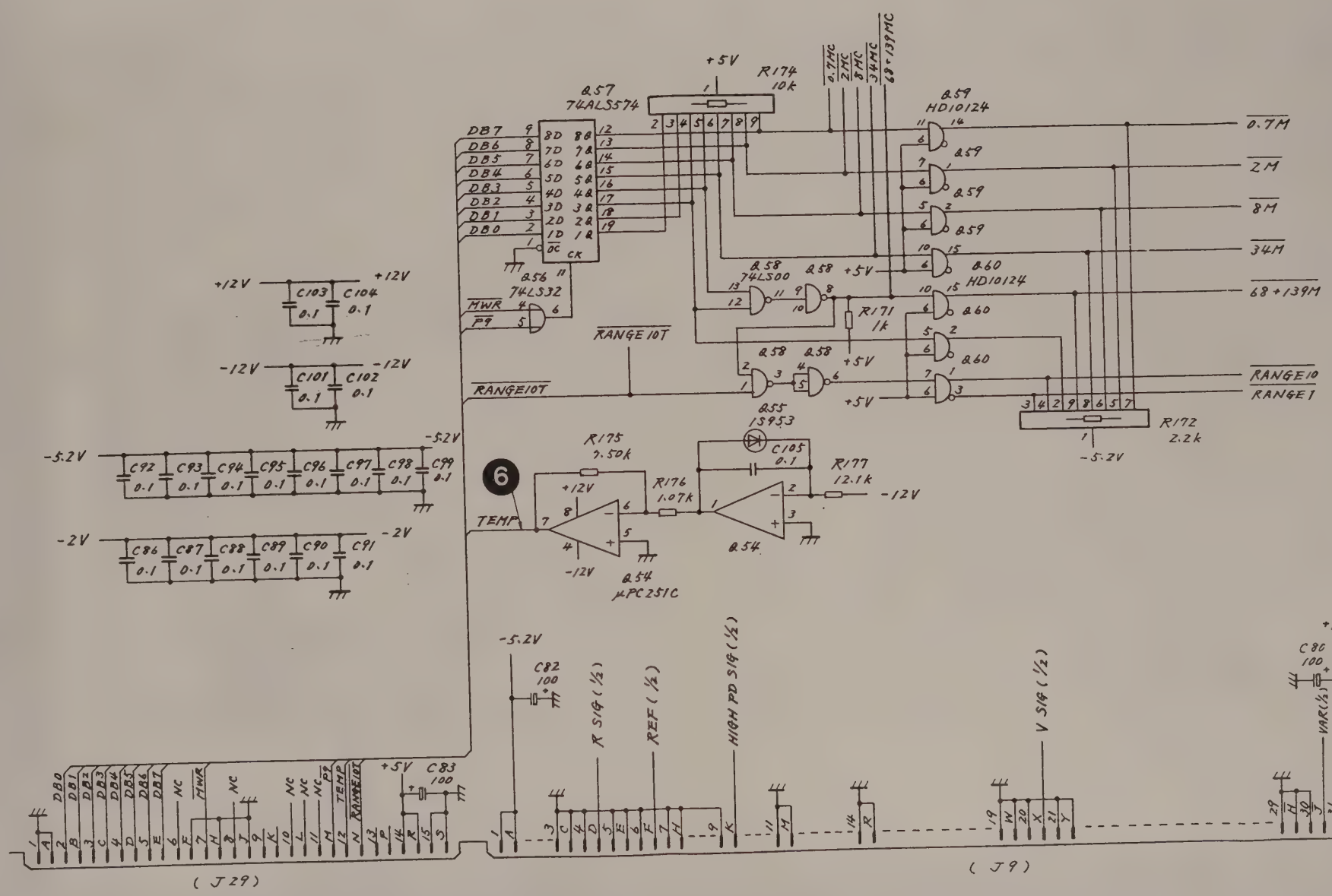
3-223/3-224

No. 0023-1985.08

43W34341 2/2

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	
APPROVED BY	DRAWN BY		

TITLE: R-Z9 PLL CIRCUIT DIAGRAM

DRAWING No. 43W34341 2/2

16

ANRITSU CORP

3-225

DEP

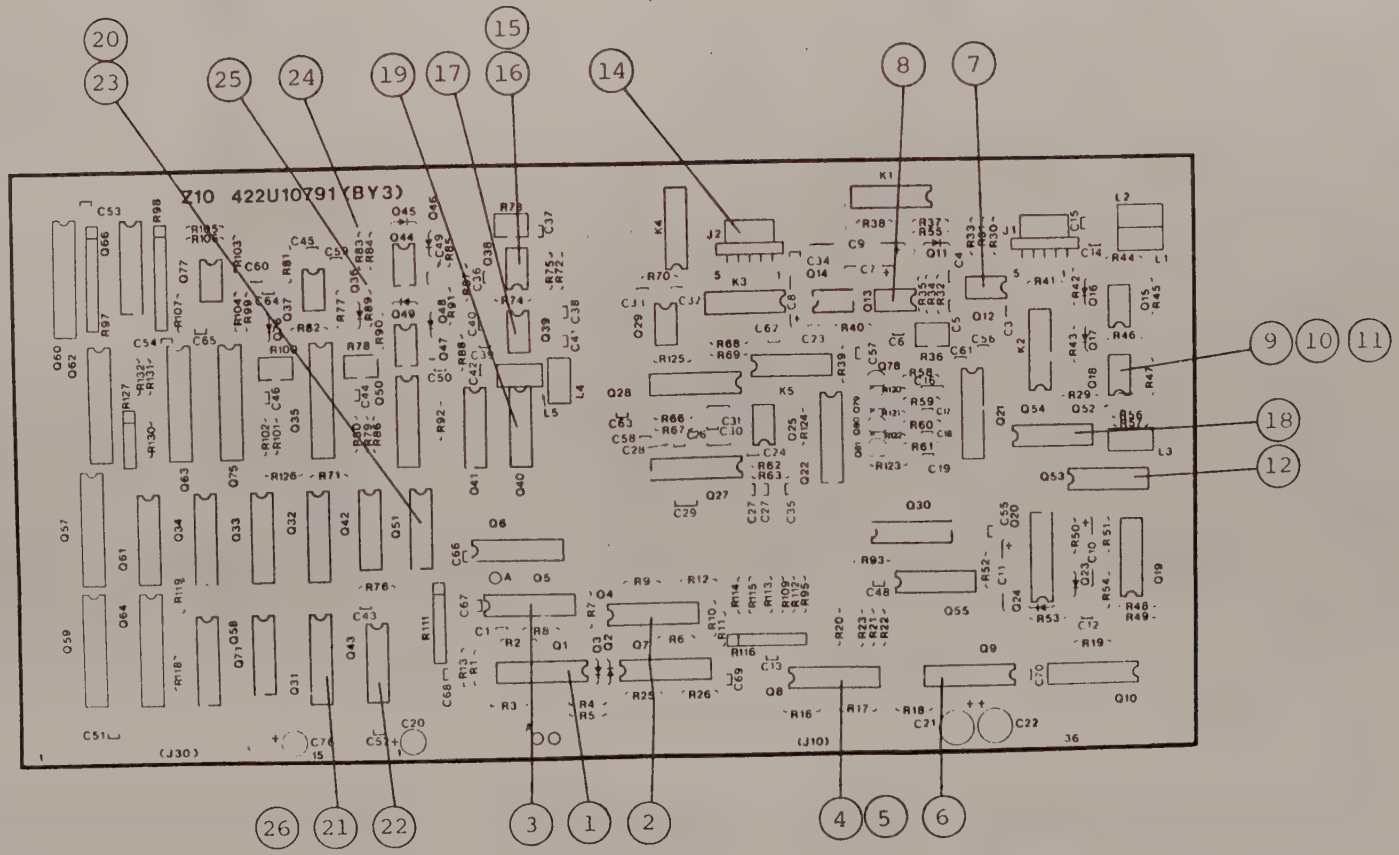
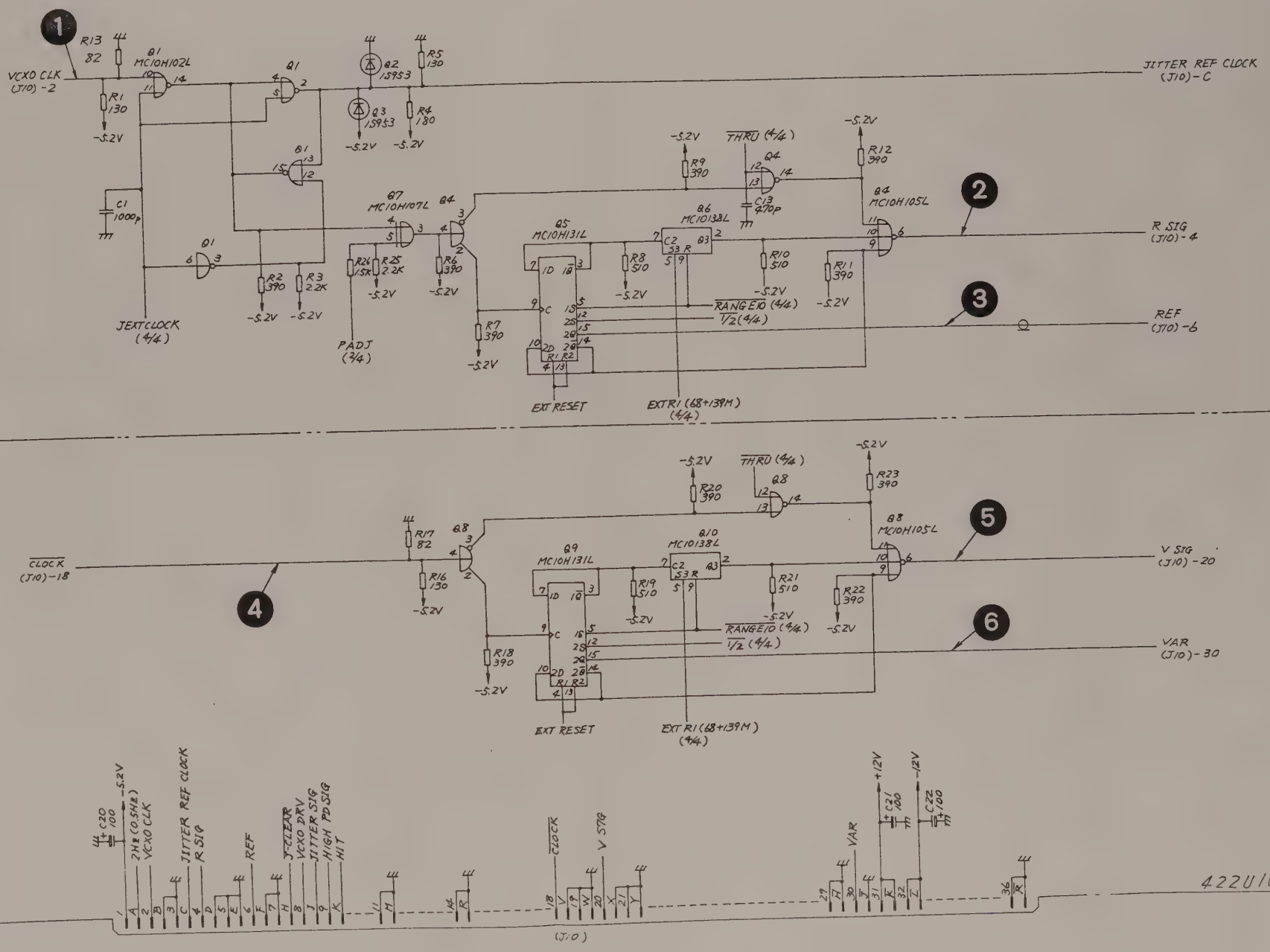


Fig. 3-170 Parts Layout of R-Z10 JITTER P.C. Board 17

43W34342 1/4

APPLICATION

REVISIONS



PC Board	422U10791
Parts List	44W84807

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY | :

17

TITLE: R-Z10 JITTER CIRCUIT DIAGRAM

DRAWING No. 43W34342 1/4

DEP

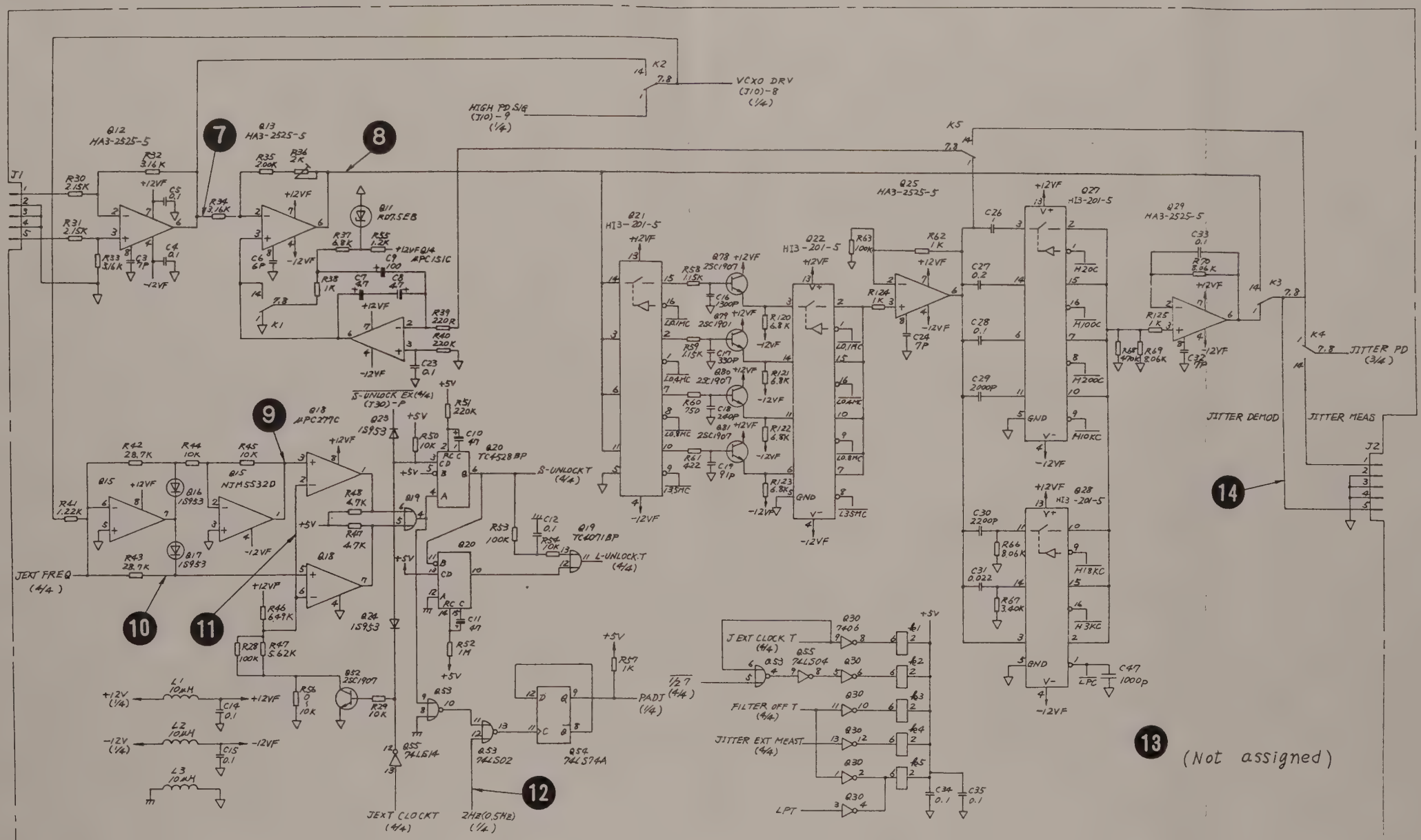
ANRITSU CORP.

3-227/3-228

43 W 34342 2/4

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	17
APPROVED BY	DRAWN BY	:	

TITLE: R-210 JITTER CIRCUIT DIAGRAM

DRAWING No. 43 W 34342 2/4

DEP

ANRITSU CORP.

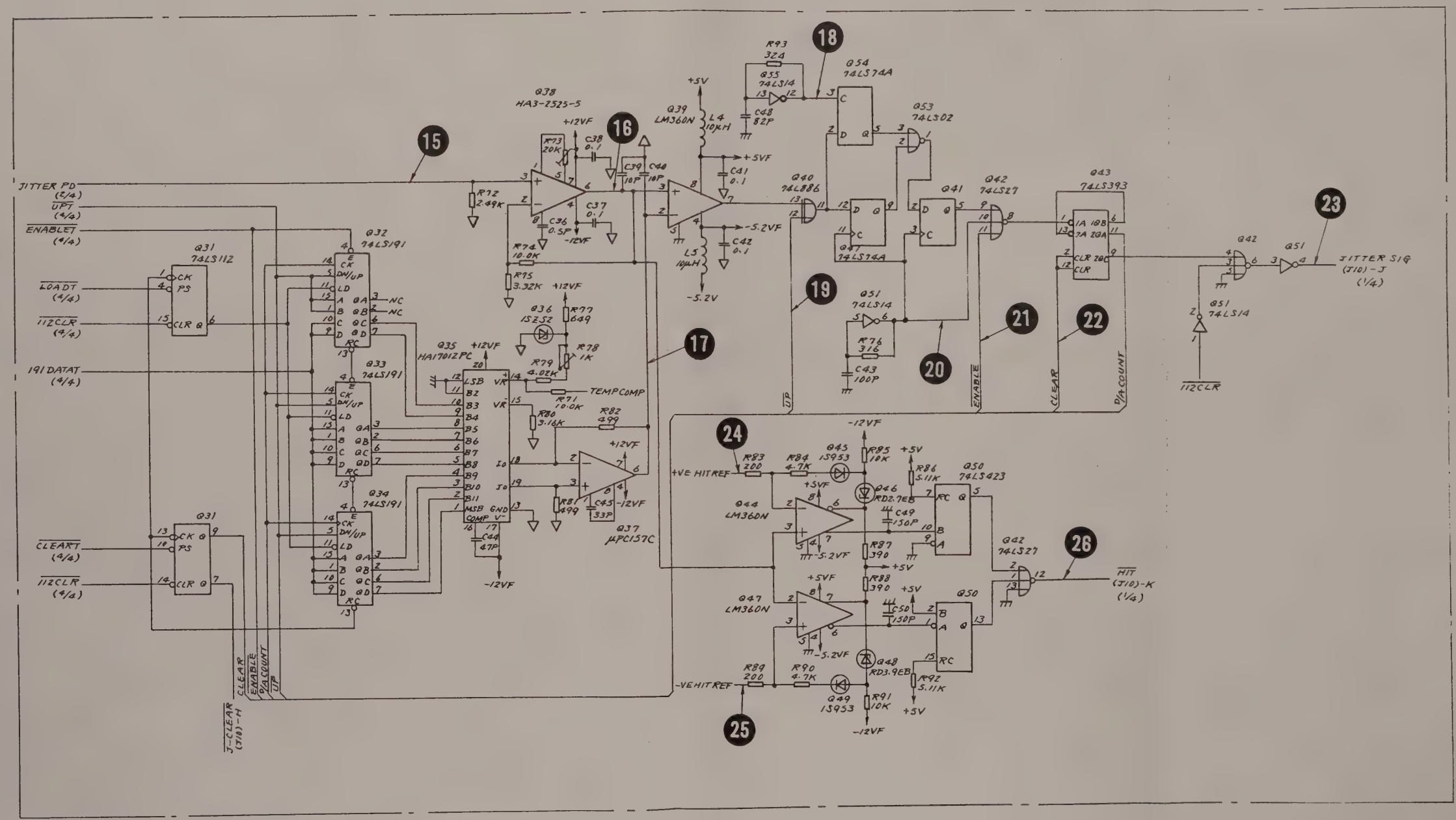
3-229/3-230

No. D023-1985.08

43W34342 3/4

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

TITLE R-Z10 JITTER CIRCUIT DIAGRAM

DRAWING No. 43W34342 3/4

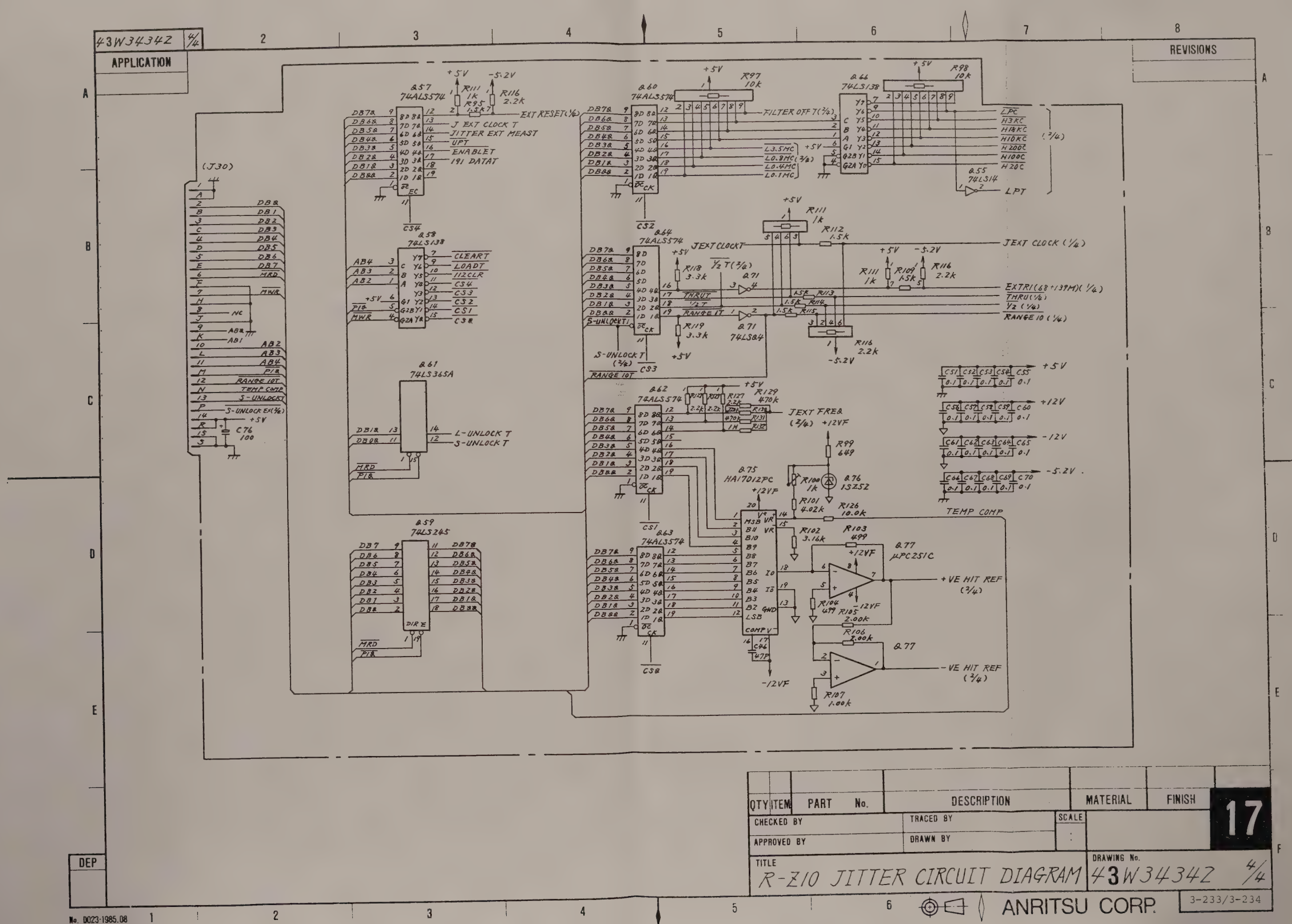
17

DEP

No. D023-1985.08

ANRITSU CORP.

3-231/3-232


43W34342 4/4
APPLICATION
REVISIONS
(J30)
Q57 74ALS574
Q58 74LS138
Q61 74LS365A
Q59 74LS245
Q60 74ALS574
Q64 74ALS574
Q62 74ALS574
Q63 74ALS574
Q66 74LS138
Q55 74LS14
Q71 74LS04
Q75 HA17012PC
Q76 1SZ52
Q77 μPC251C
EXT RESET(1/4)
J EXT CLOCK T
JITTER EXT MEAST
UPT
ENABLET
191 DATAT
CLEART
LOADT
112CLR
L-UNLOCK T
S-UNLOCK T
FILTER OFF T(2/4)
L3.5MC
L0.8MC(2/4)
L0.4MC
L0.1MC
LPC
H3KC
H18KC
H10KC
H200C
H100C
H20C
LPT
JEXT CLOCKT
JEXT CLOCK (1/4)
EXTRI(68+139M)(1/4)
THRU(1/4)
1/2 (1/4)
RANGE 10 (1/4)
S-UNLOCK T (2/4)
RANGE 10T
JEXT FREQ (2/4)
TEMP COMP
+VE HIT REF (2/4)
-VE HIT REF (2/4)
+5V
+12V
-12V
-5.2V
C76 100
C46 47P
R97 10k
R98 10k
R99 649
R100 1k
R101 4.02k
R102 3.16k
R103 499
R104 499
R105 2.00k
R106 2.00k
R107 1.00k
R126 10.0k
R129 470k
R111 1k
R112 1.5k
R113 1.5k
R114 1.5k
R115 1.5k
R116 2.2k
R118 3.3k
R119 3.3k
R109 1.5k
R127 2.2k
R131 470k
R132 1M
R95 1.5k
R116 2.2k
C51 0.1
C52 0.1
C53 0.1
C54 0.1
C55 0.1
C56 0.1
C57 0.1
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C67 0.1
C68 0.1
C69 0.1
C70 0.1
DEP
QTY ITEM PART No. DESCRIPTION MATERIAL FINISH
CHECKED BY
TRACED BY
SCALE
APPROVED BY
DRAWN BY
17
TITLE
R-Z10 JITTER CIRCUIT DIAGRAM
DRAWING No.
43W34342 4/4
ANRITSU CORP.
3-233/3-234
No. 0023-1985.08

3.6.7 R-Z11 COUNTER 18 P.C. Board

(1) Circuit Description

Fig. 3-171 shows a block diagram of the R-Z11 P.C. board.

The counter circuit counts the error pulse, jitter amplitude pulse, and jitter hit pulse output from each block.

The error input switch of the counter circuit selects either the bit error or code error pulse. The counter circuit consists of five counters; for the bit/code block error, interval, jitter hit, jitter amplitude and clock pulse, and it sends counting results to the CPU through the BUS. Both the error counter and the jitter hit counter can count up to 9.99×10^{15} without dead time.

Each counter consists of two counters which are synchronously switched to the input clock signal and results in two counts added by CPU.

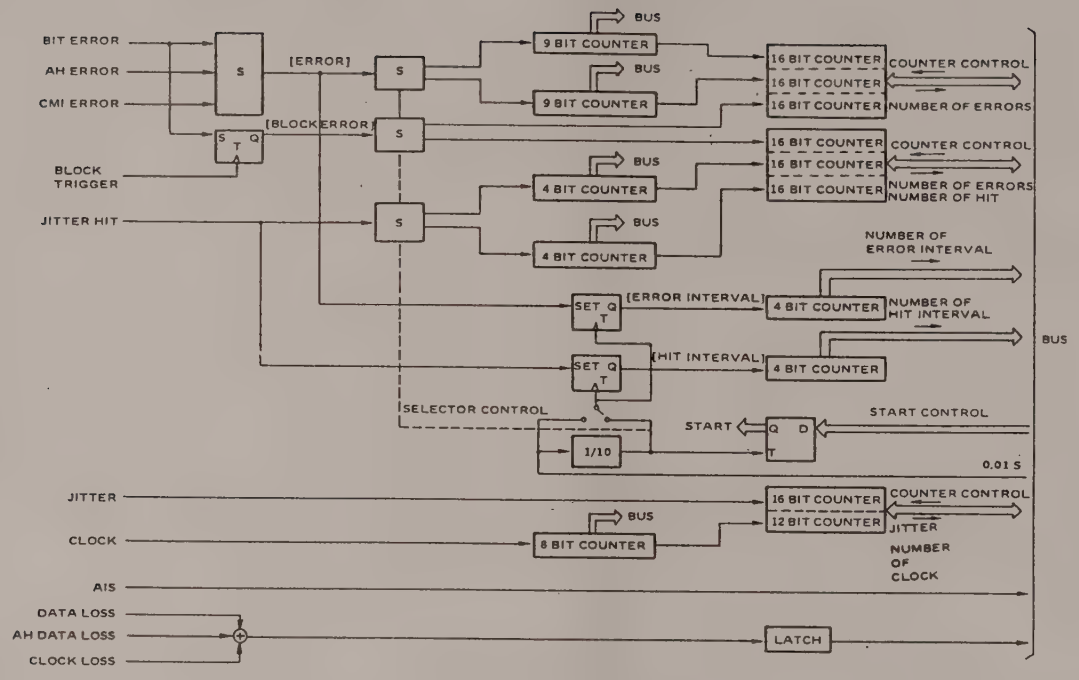


Fig. 3-171 R-Z11 Counter Block Diagram

(2) Troubleshooting and adjustment

After lifting the R-Z11 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment. (See Fig. 3-82)

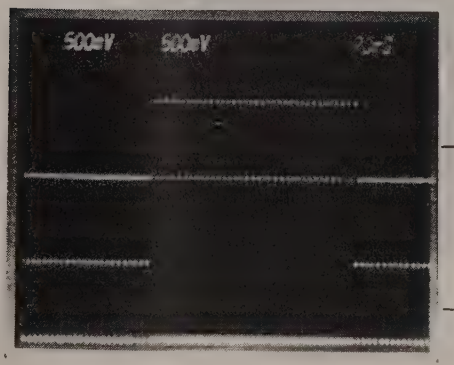
(a)

BIT RATE	;	704 (kb/s)
FORMAT	;	HDB3
ERROR ADD RATE	;	10^{-3}
ERROR ADD MODE	;	BIT

Check the TP ❶ to TP ❼ signal waveforms using the oscilloscope.

V: 500mV/div
H: 500μs/div

Fig. 3-172 TP ❶ Waveform of R-Z11



V: 500mV/div
H: 2ms/div

Fig. 3-173 TP ❷ , ❸ Waveform of R-Z11

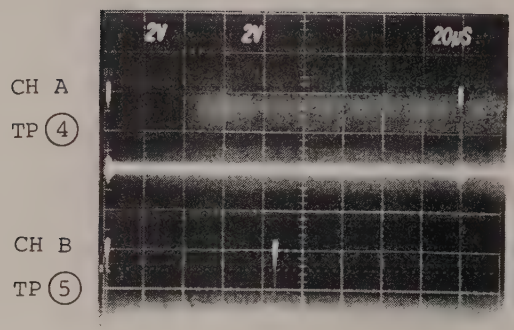


Fig. 3-174 TP ❹ , ❺ Waveform of R-Z11

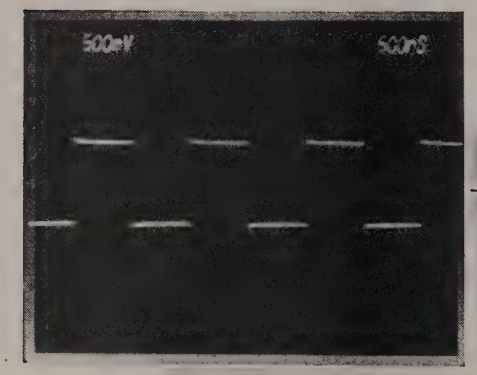


Fig. 3-175 TP ❻ Waveform of R-Z11

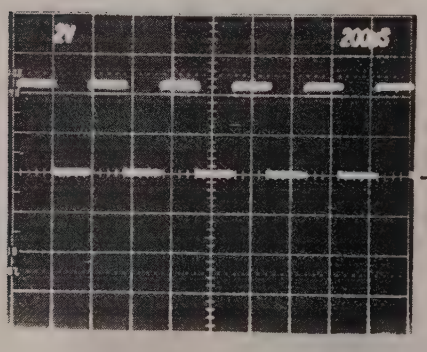


Fig. 3-176 TP ❼ Waveform of R-Z11

If the above waveforms are OK, go to the next step. If not OK, troubleshoot the relevant circuit(s) near the test point.

(b)

BIT RATE ; 704 (kb/s)
FORMAT ; HDB3

Add a jitter to the ME520B(T) output signal.

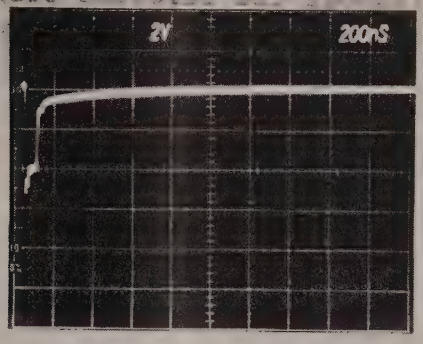
Jitter Amplitude: 0.500 UI_{p-p}

Jitter frequency: 1 kHz

ME520B(R) jitter measurement condition.

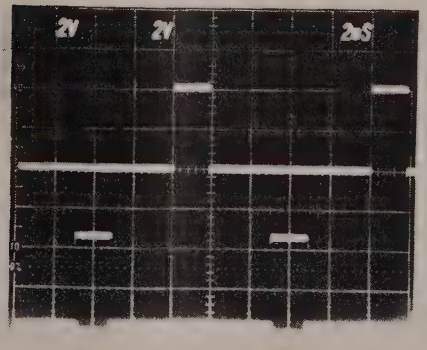
Range : 1
Hit Threshold : 0.200

Check the TP ❽ to TP ⓫ signal waveforms using the oscilloscope.



V: 2V/div
H: 200ns/div

Fig. 3-177 TP ❽ Waveform of R-Z11



V: 2V/div
H: 2ms/div

Fig. 3-178 TP ❾ , ❿ Waveform of R-Z12

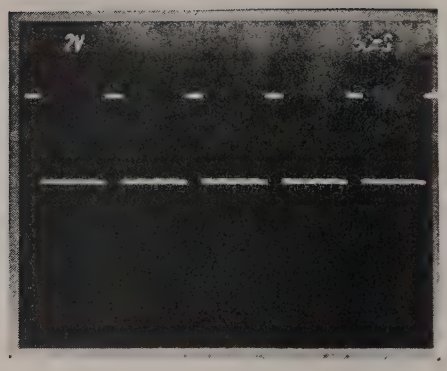


Fig. 3-179 TP ⓫ Waveform of R-Z11

If the above waveforms are OK, Z11 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

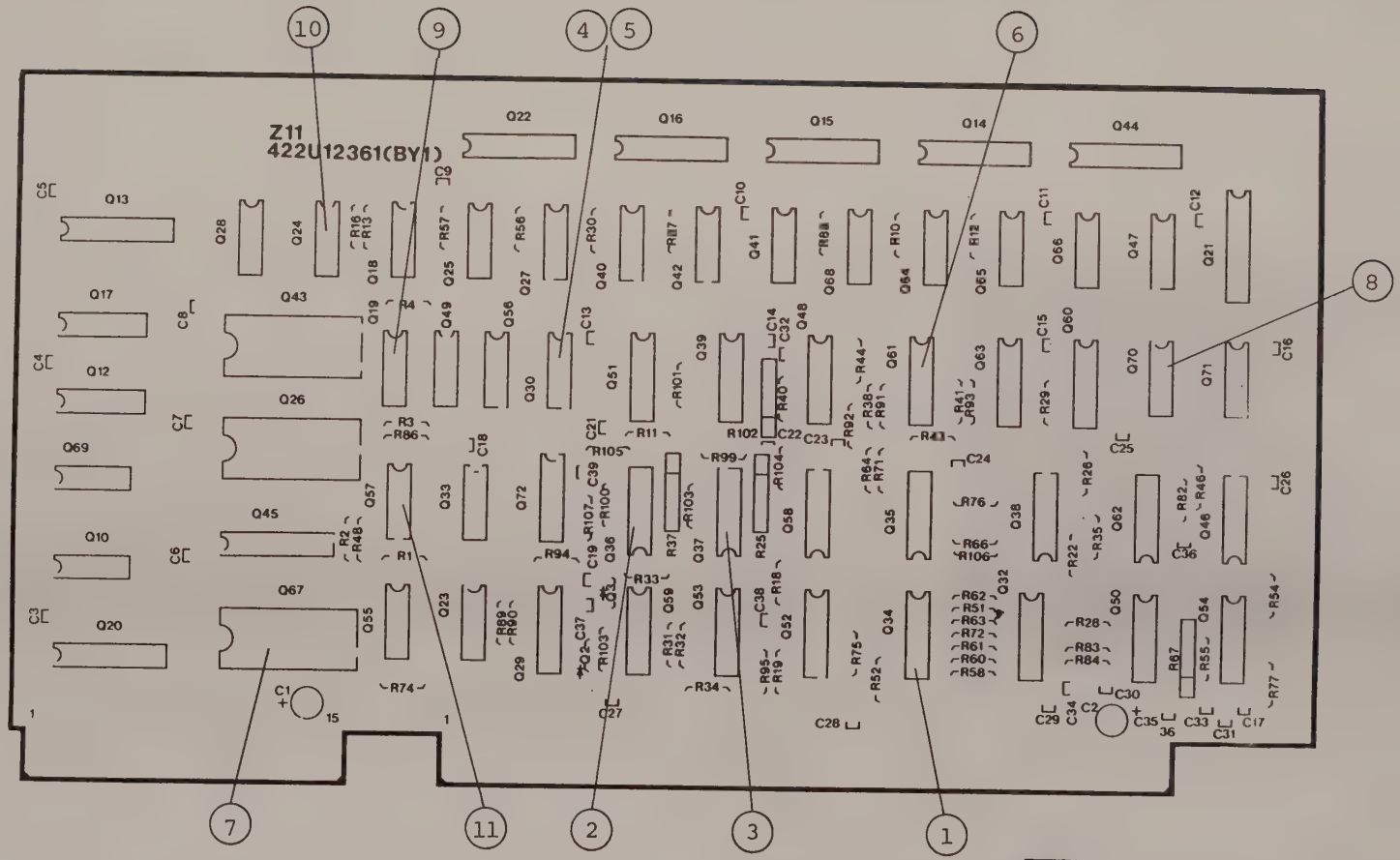
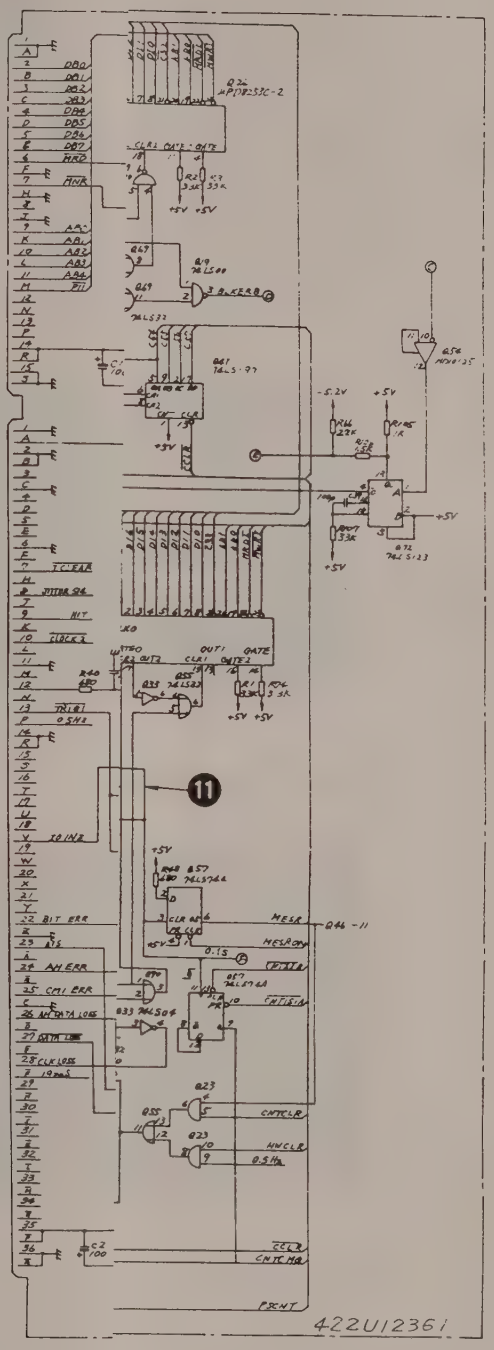


Fig. 3-180 Parts Layout of R-Z11 COUNTER P.C. Board 18

APPLICATION	REVISIONS
43W34343	

43W34343 1/1



DESCRIPTION	MATERIAL	FINISH	18
TRACED BY	SCALE		
DRAWN BY			

DEP

CIRCUIT DIAGRAM

DRAWING No 43W34343

No 0021 1985 08

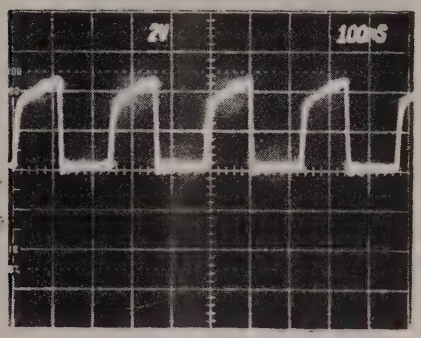
ANRITSU CORP. 3-243/3-244

3.6.8 R-Z12 CPU 19 P.C. Board

(1) Troubleshooting and Adjustment

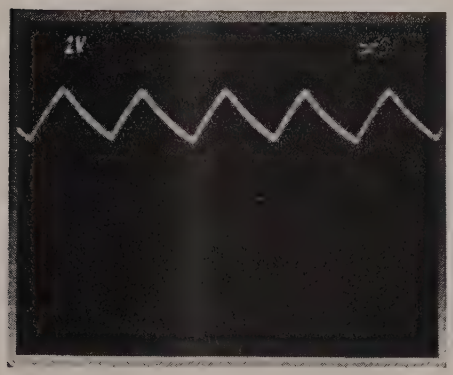
After lifting the R-Z12 P.C. board using the R-Z1 extender, perform troubleshooting and adjustment. (See Fig. 3-82)

(a) Check the TP ❶ to TP ❸ signal waveforms using the oscilloscope.



V: 2V/div
H: 100ns/div

Fig. 3-181 TP ❶ Waveform of R-Z12



V: 1V/div
H: 5ms/div

Fig. 3-182 TP ❷ Waveform of R-Z12

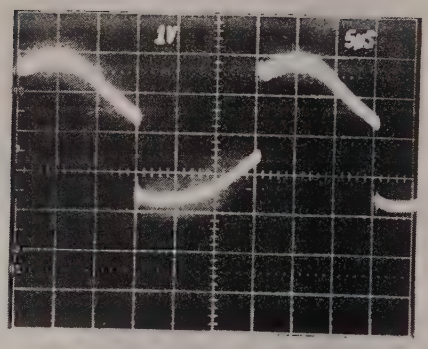


Fig. 3-183 TP ❸ Waveform of R-Z12

If the above waveforms are OK, Z12 is OK. If not OK, troubleshoot the relevant circuit(s) near the test point.

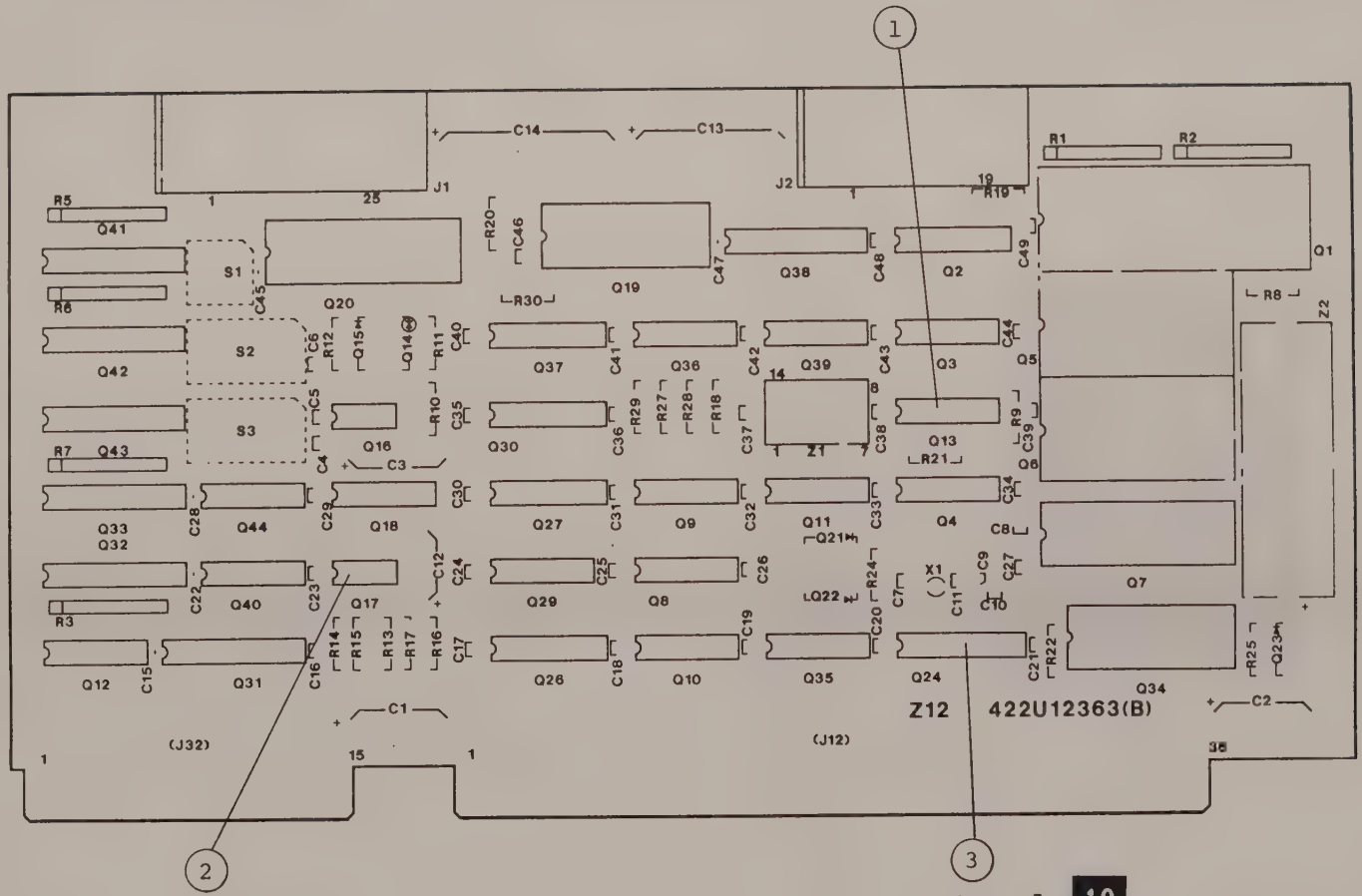


Fig. 3-184 Parts Layout of R-Z12 CPU P.C. Board 19

43W34344 1/2

APPLICATION

REVISIONS

Q1 LH0080A

Q2 74LS138

Q3 74L321

Q4 TC4001BP

Q5 HN27256G-25

Q6 HN27256G-25

Q7 HM6264 LP-15

Q8 74LS08

Q9 74LS32

Q10 74LS138

Q11 74LS10

Q12 7432

Q13 7404

Q15 1S953

Q16 TL7705 CP-B

Q17 μPC271C

Q18 TC4013BP

Q19 μPD8253C-2

Q20 μPD8259C-2

Q21 1S953

Q22 1S953

Q23 1S953

Q24 RPSC15

Q26 74LS138

Q27 74LS138

Q29 74LS30

Q30 74LS139

Q31 74LS541

Q32 74LS245

Q33 74LS245

Q40 74LS04

X1 TRC-101A -7C

Z1 TCO-706A 4.096 MHz

PC Board	422U12363
Parts List	44W84809

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE M-1

APPROVED BY | DRAWN BY

TITLE R-Z12 CPU CIRCUIT DIAGRAM

DRAWING No. 43W34344 1/2

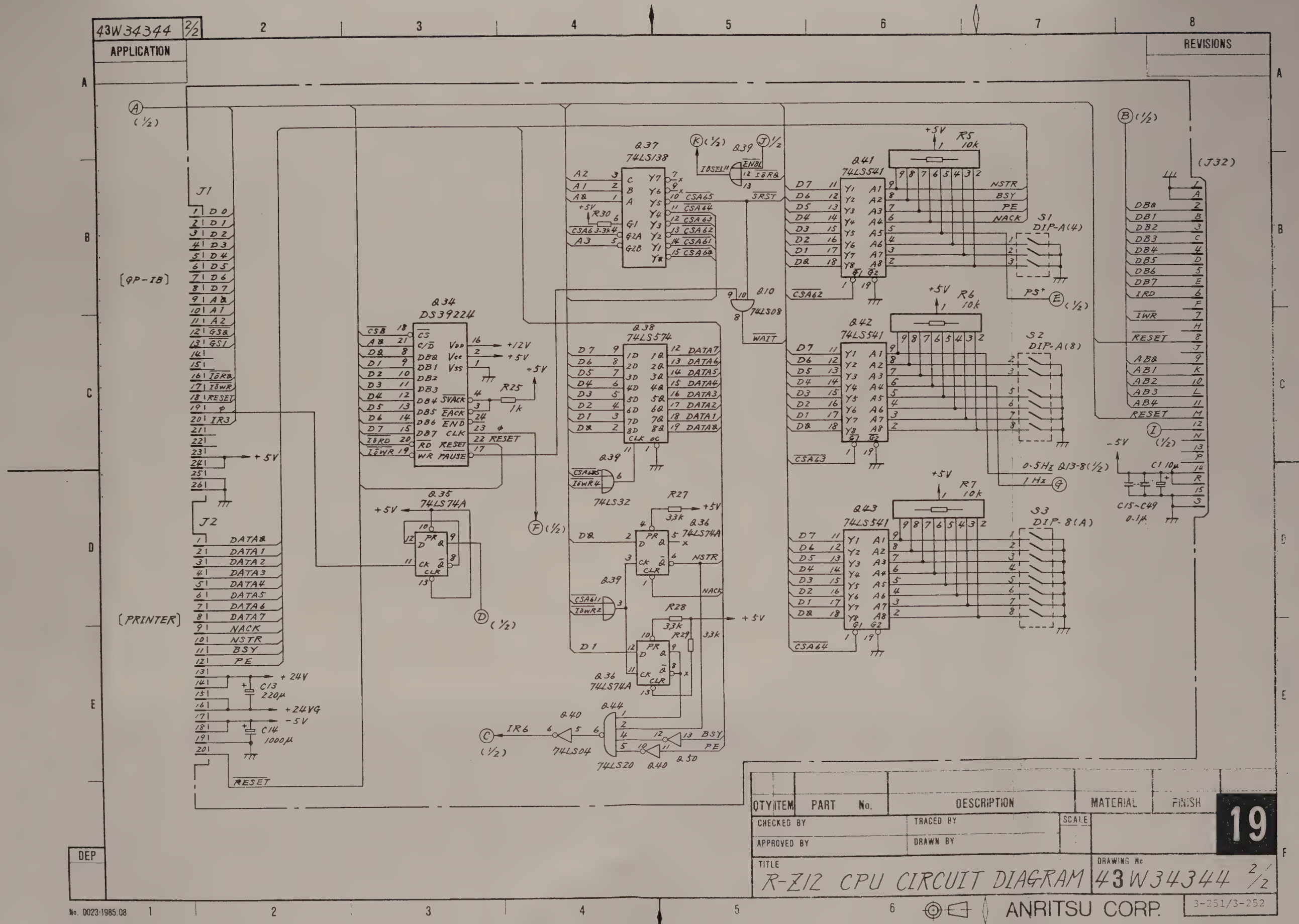
19

DEP

ANRITSU CORP.

3-249/3-250

No. 0023-1985.08


43W34344 2/2
APPLICATION
REVISIONS
J1
[GP-IB]
J2
[PRINTER]
Q34 DS39224
Q35 74LS74A
Q37 74LS138
Q38 74LS574
Q39 74LS32
Q36 74LS74A
Q40 74LS04
Q44 74LS20
Q10 74LS08
Q41 74LS541
Q42 74LS541
Q43 74LS541
R5 10k
R6 10k
R7 10k
S1 DIP-A(4)
S2 DIP-A(8)
S3 DIP-8(A)
(J32)
C13 220μ
C14 1000μ
C15~C49 0.1μ
C1 10μ
+24V
+24VG
-5V
+12V
+5V
RESET
WAIT
SRST
NSTR
BSY
PE
NACK
IR6
0.5Hz Q13-8(1/2)
1Hz
QTY ITEM
PART No.
DESCRIPTION
MATERIAL
FINISH
CHECKED BY
TRACED BY
SCALE
APPROVED BY
DRAWN BY
TITLE
R-Z12 CPU CIRCUIT DIAGRAM
DRAWING No
43W34344 2/2
19
DEP
No. 0023-1985.08
ANRITSU CORP.
3-251/3-252

3.6.9 R-Z14 DISPLAY 20 ,

R-Z15 GP-IB INTERFACE 21 ,

R-Z17 MOTHERBOARD 23 ,

PRINTER UNIT 24 ,

PRINTER INTERFACE 25 ,

PRINTER CONTROL 26 ,

and EXTENDER BOARD.

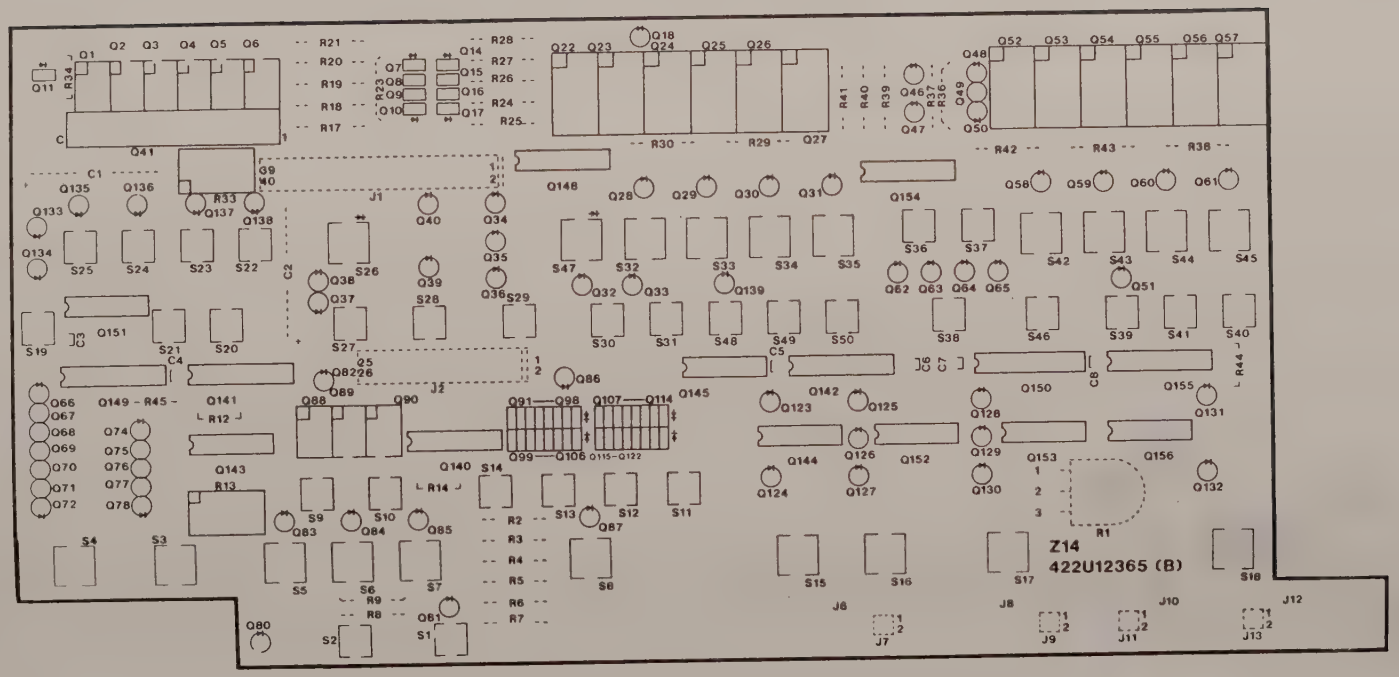
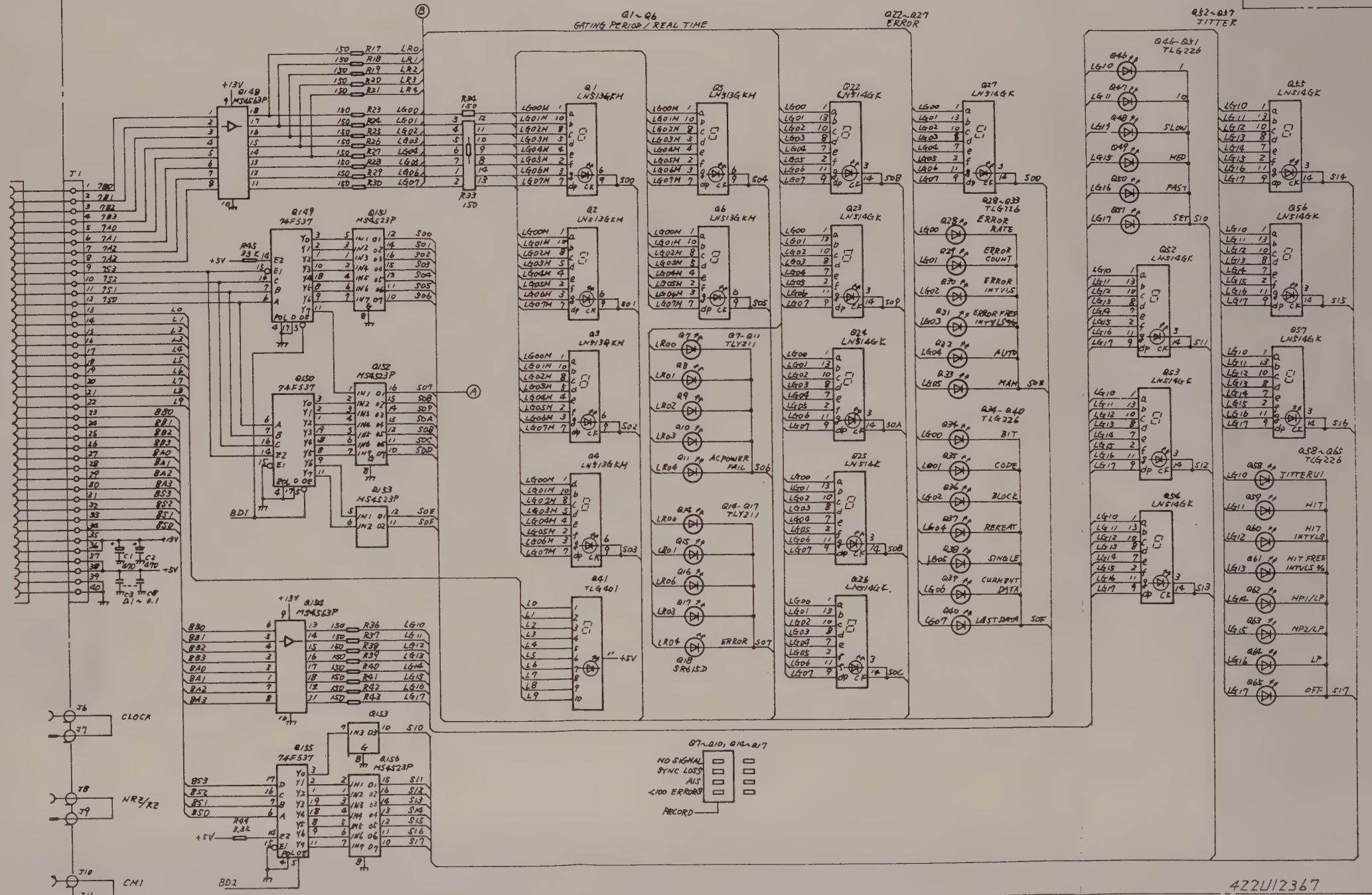


Fig. 3-185 Parts Layout of R-Z14 DISPLAY P.C. Board 20

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	20
APPROVED BY	DRAWN BY	M-1	

PC Board	422U12367
Parts List	44W84810

TITLE: R-Z14 DISPLAY CIRCUIT DIAGRAM

DRAWING No. 43W34345 1/2

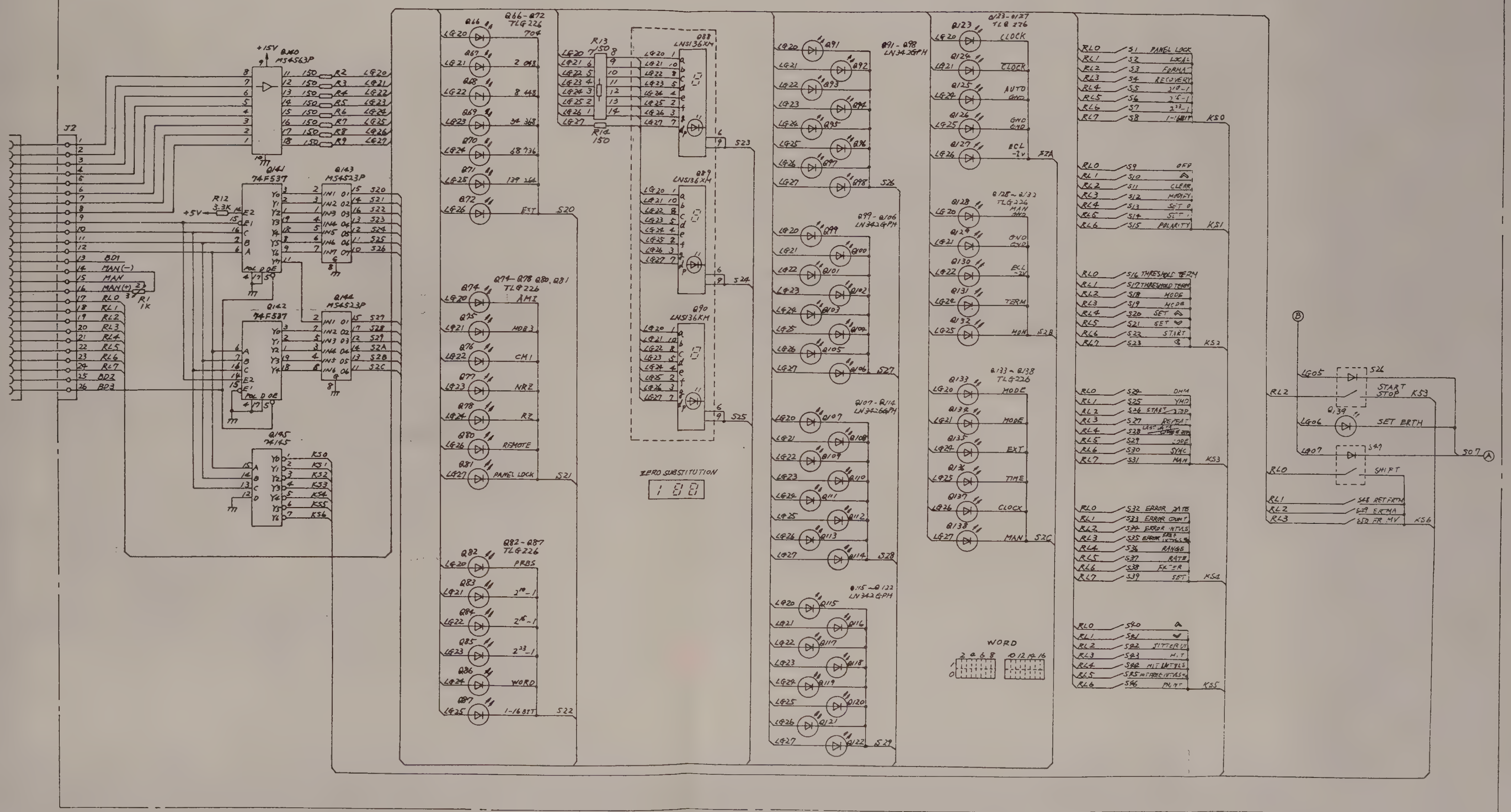
DEP

ANRITSU CORP.

43W34345 2/2

APPLICATION

REVISIONS



QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY

APPROVED BY

TRACED BY

DRAWN BY

SCALE :

M-1

20

TITLE R-Z14 DISPLAY

DRAWING No. 43W34345 2/2

ANRITSU CORP

3-257

DEP

No. D023-1985.08

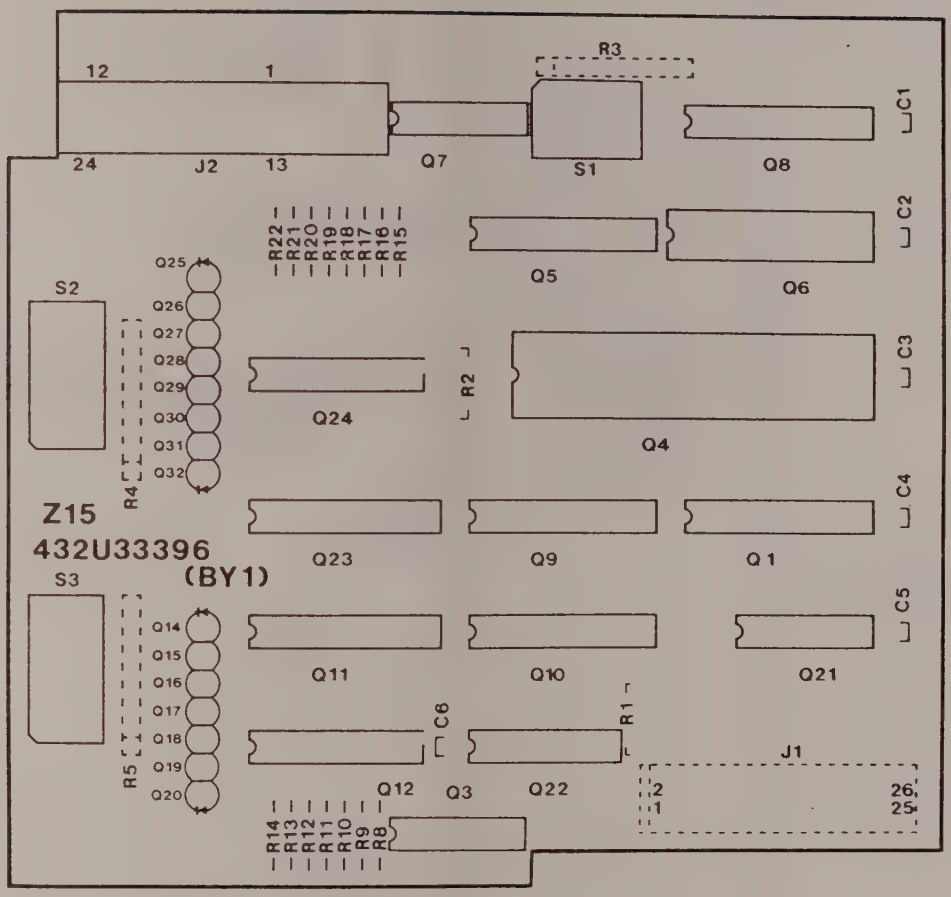


Fig. 3-186 Parts Layout of R-Z15 GP-IB INTERFACE P.C. Board 21

43W34346 1/1

APPLICATION

REVISIONS

J1

J2

Q1 74LS245

Q2 74LS08

Q3 74L332

Q4 μPD7210C

Q5 SN75160BN

Q6 SN75162BN

Q7 74LS00

Q8 SN74LS540N

Q9 SN74LS540N

Q10 SN74LS540N

Q11 SN74LS574N

Q12 MS4563P

Q22 74LS138

Q23 SN74ALS574N

Q24 MS4563P

R1 10K

R2 10K

R3 10K

R4 10K

R5 10K

S1 DIP-A(6)

S2 DIP-A(8)

S3 DIP-A(8)

R15~R22 330~820

Q25~Q32 TLG226

R8~R14 330~820

Q14~Q20 TLG226

432U33396

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE M-1

APPROVED BY | DRAWN BY

TITLE R-Z15 GP-IB CIRCUIT DIAGRAM

DRAWING No. 43W34346 1/1

21

DEP

PC Board	432U33396
Parts List	44W84811

No. 0023-1985.08

ANRITSU CORP.

3-259

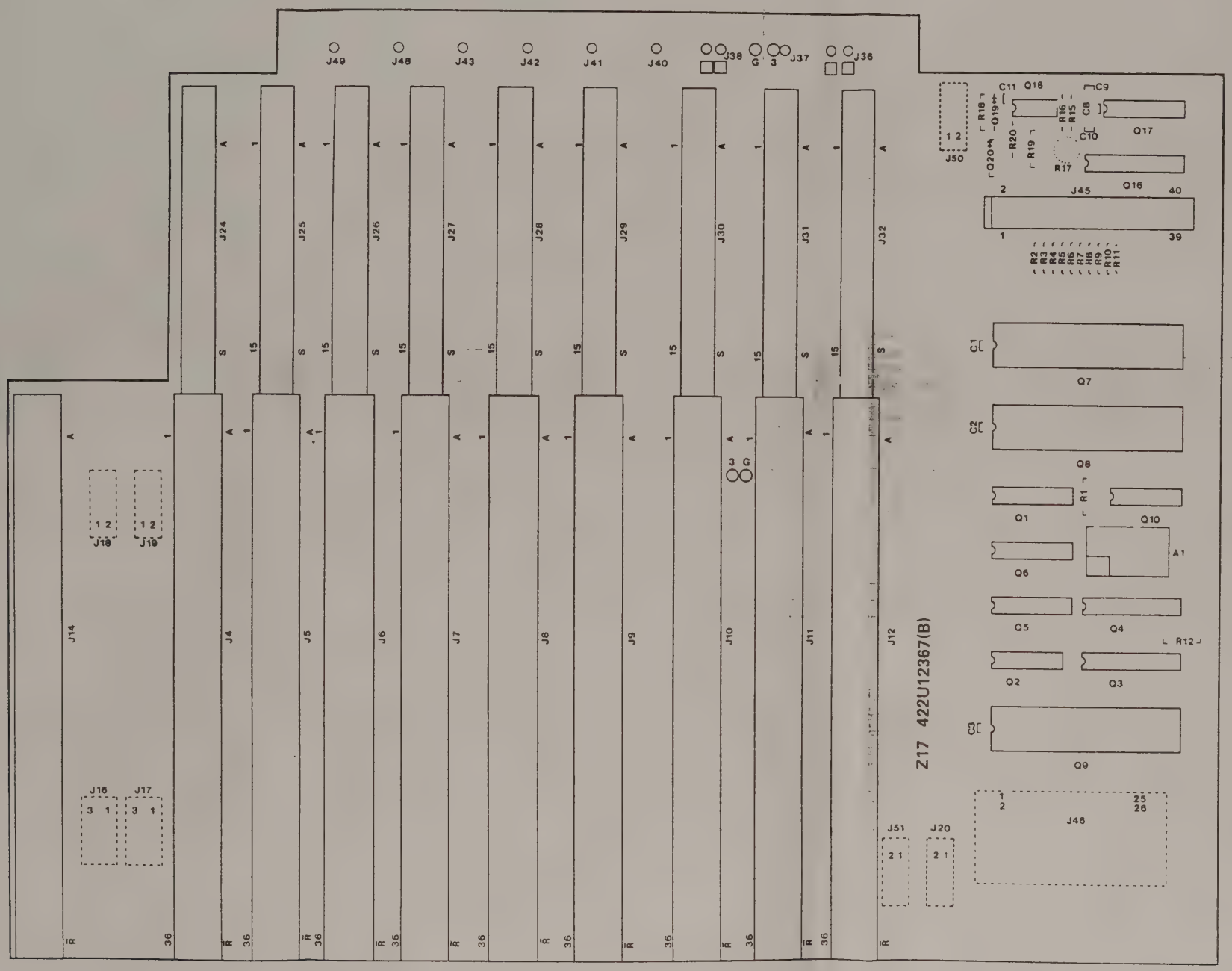
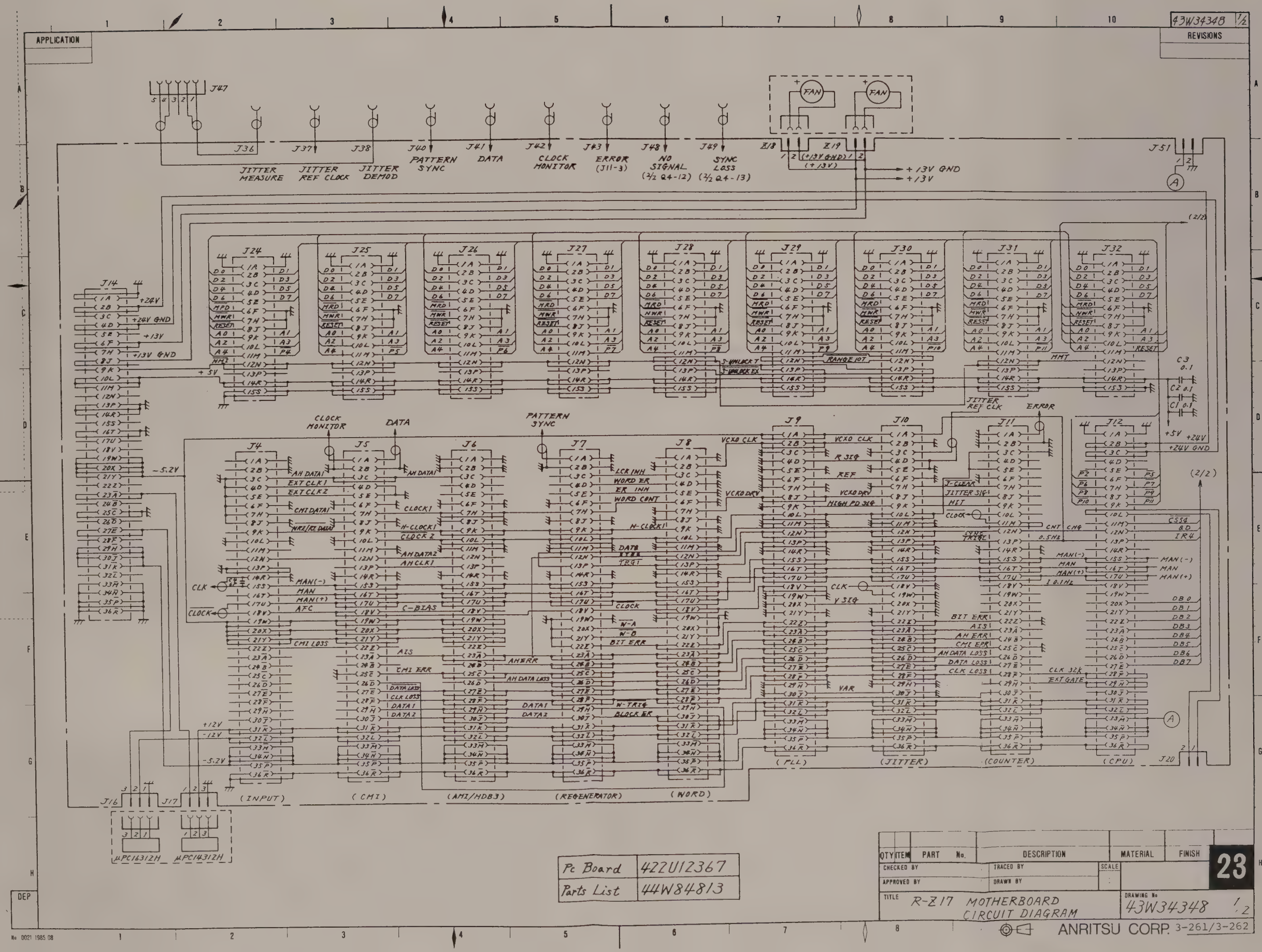


Fig. 3-187 Parts Layout of R-Z17 MOTHER BOARD P.C. Board 23



43W34348 1/2
APPLICATION
REVISIONS
J47
J36
J37
J38
J40
J41
J42
J43
J48
J49
J51
JITTER MEASURE
JITTER REF CLOCK
JITTER DEMOD
PATTERN SYNC
DATA
CLOCK MONITOR
ERROR (J11-3)
NO SIGNAL (2/2 Q4-12)
SYNC LOSS (2/2 Q4-13)
FAN
Z18
Z19
(+13V GND)
(+13V)
+13V GND
+13V
J14
J24
J25
J26
J27
J28
J29
J30
J31
J32
J4
J5
J6
J7
J8
J9
J10
J11
J12
J16
J17
J20
CLOCK MONITOR
DATA
PATTERN SYNC
ERROR
(INPUT)
(CMI)
(AMI/HDB3)
(REGENERATOR)
(WORD)
(PLL)
(JITTER)
(COUNTER)
(CPU)
μPC16312H
μPC14312H
Pc Board 422U12367
Parts List 44W84813
QTY ITEM PART No. DESCRIPTION MATERIAL FINISH
CHECKED BY
TRACED BY
SCALE
APPROVED BY
DRAWN BY
TITLE R-Z17 MOTHERBOARD CIRCUIT DIAGRAM
DRAWING No 43W34348 1/2
23
ANRITSU CORP. 3-261/3-262
DEP
No 0021 1985 08

43W34348 3/2

APPLICATION

REVISIONS

Q1 74LS138

Q3 SN74ALS574N

Q5 TD62103P

Q4 SN74ALS574AN

Q6 TD62103P

Q7 μPD8279C-2

Q8 μPD8279C-2

Q9 μPD8279C-2

Q16 SN74ALS574N

Q17 DAC0806LCN

Q18 μPC151C

Q2 74LS32

Q10 74LS04

A1 CMB-06

SYNC LOSS (1/2, J49)

NO SIGNAL (1/2, J48)

422U12367

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY	TRACED BY	SCALE	23
APPROVED BY	DRAWN BY	:	

TITLE: R-Z17 MOTHERBOARD CIRCUIT DIAGRAM

DRAWING No. 43W34348 2/2

DEP

ANRITSU CORP.

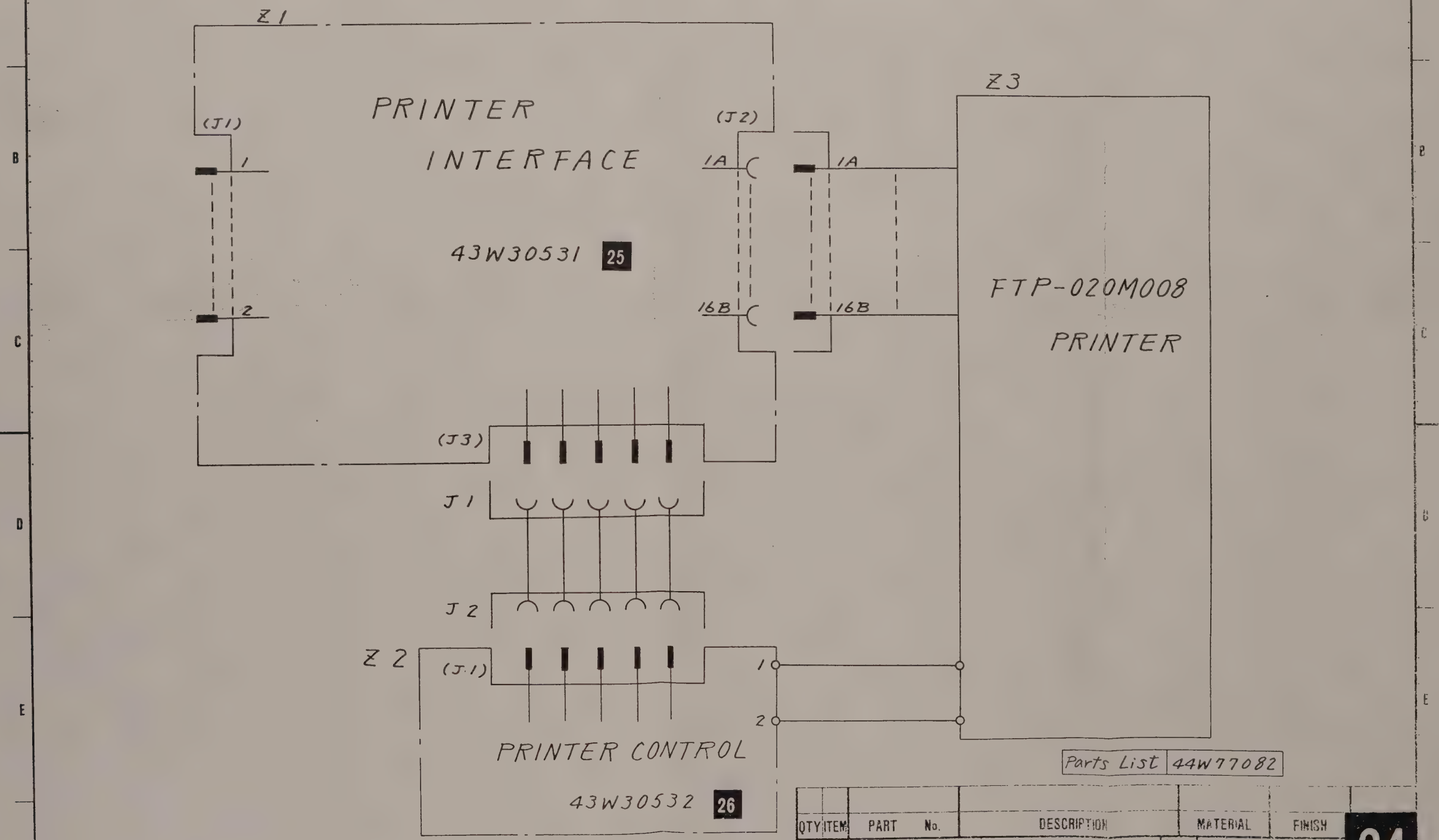
3-263/3-264

No. 0023-1985.08

43W30223 1/1

APPLICATION

REVISIONS



Parts List 44W77082

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

24

TITLE R-Z18 PRINTER UNIT
CIRCUIT DIAGRAM

DRAWING NO. 43W30223 1/1

DEP

ANRITSU CORP

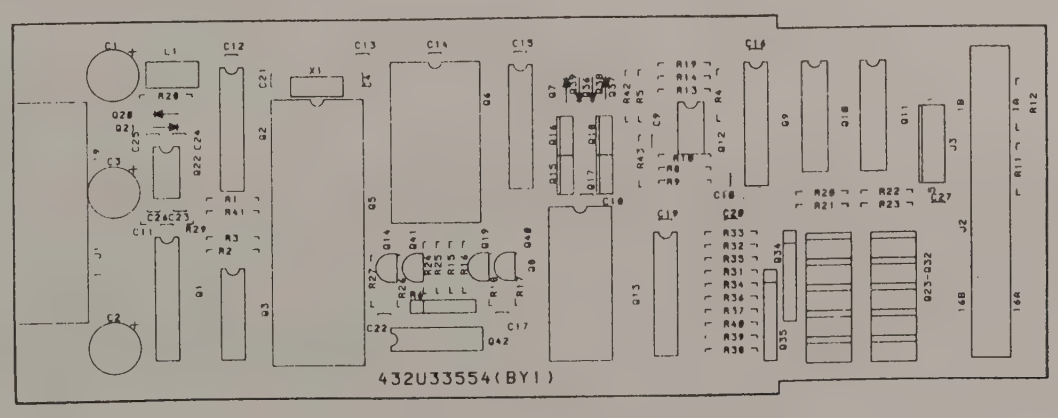
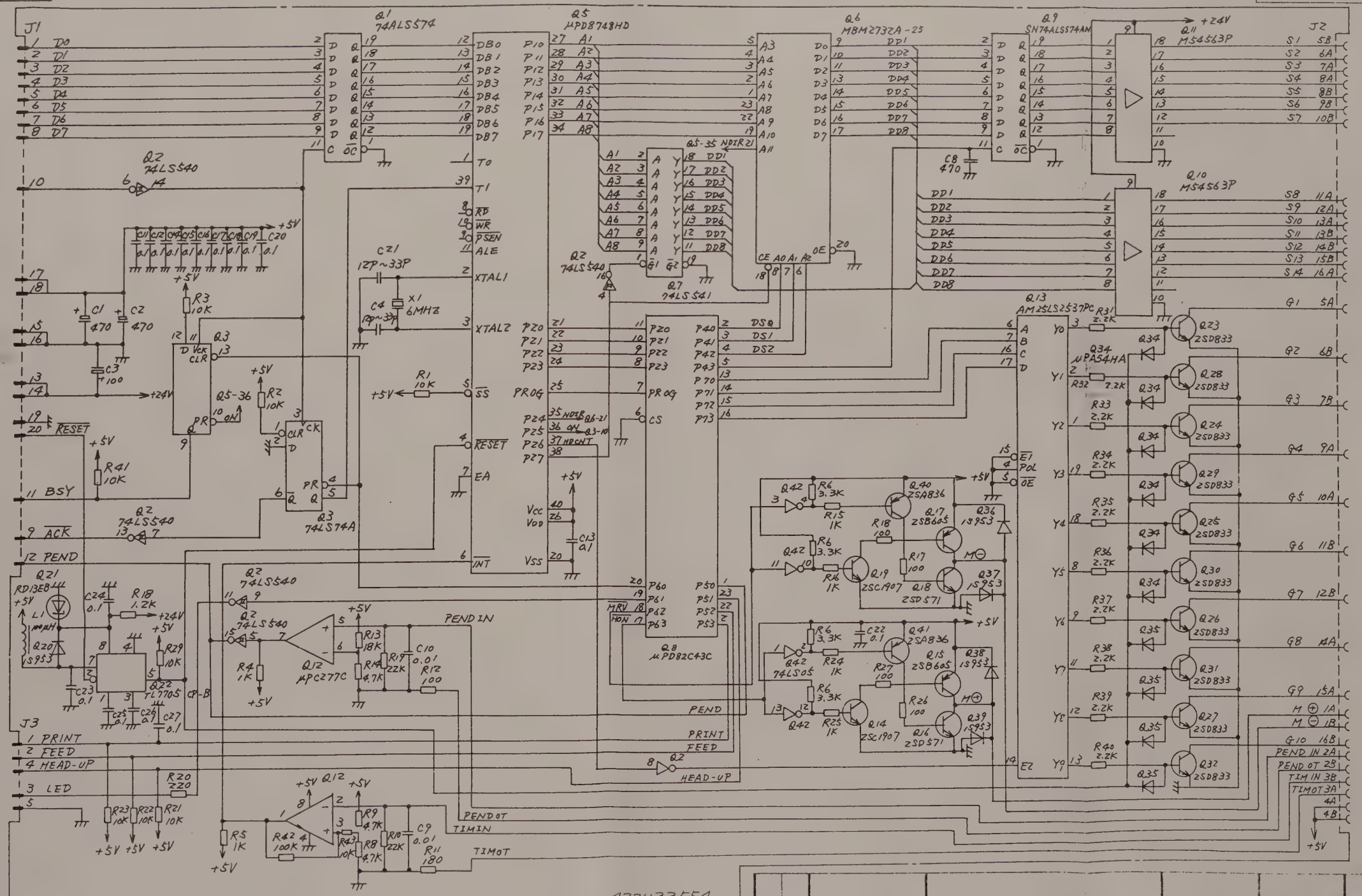


Fig. 3-188 Parts Layout of PRINTER INTERFACE P.C. BOARD 25

43W30531 1/1

APPLICATION

REVISIONS



432U33554

PC Board	432U33554
Parts List	44W77606

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE M-1

APPROVED BY | DRAWN BY

TITLE R-Z18-Z1 PRINTER INTERFACE CIRCUIT DIAGRAM

DRAWING No. 43W30531 1/1

25

DEP

No. D023-1985.08

ANRITSU CORP.

3-267

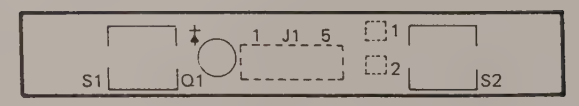
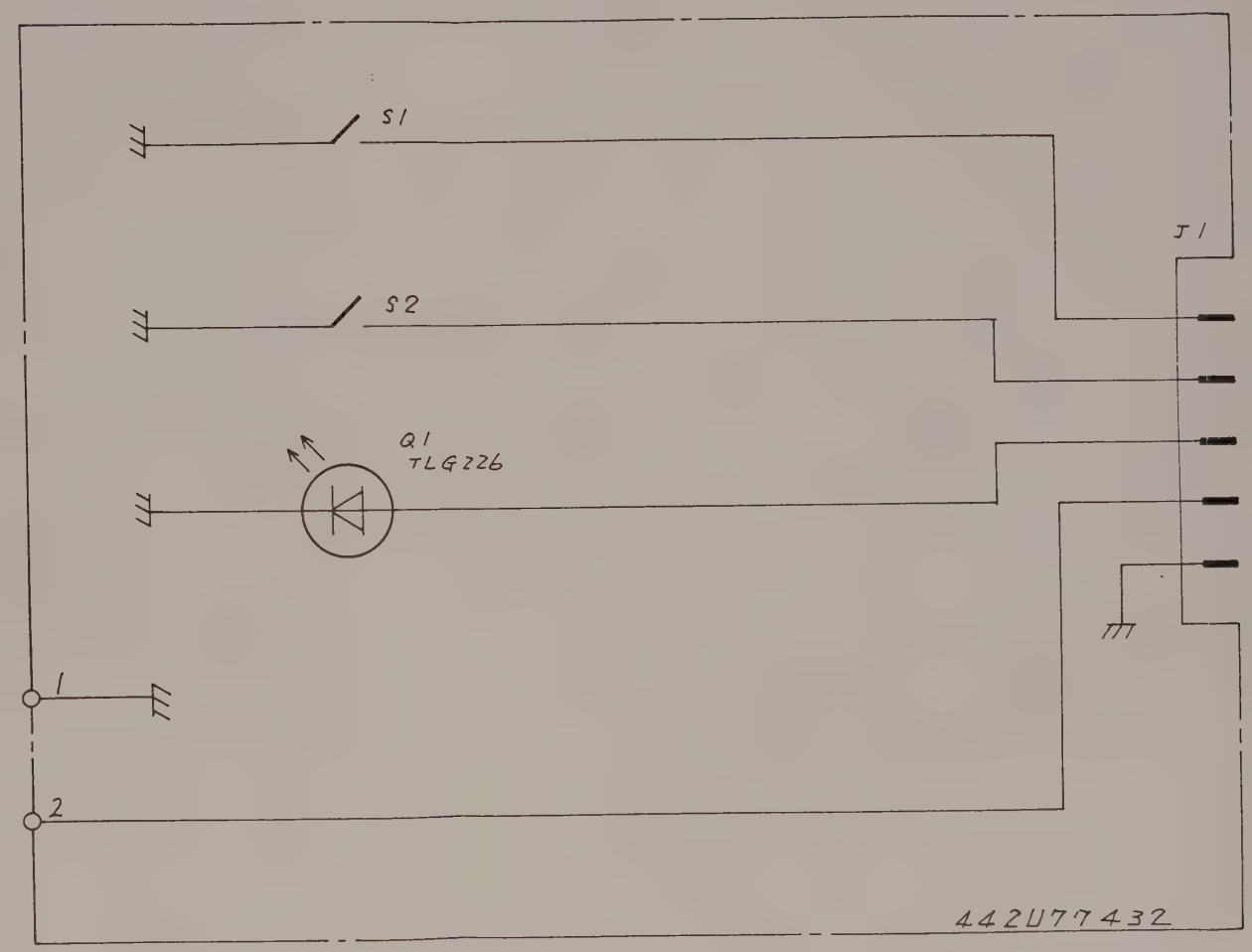


Fig. 3-189 Parts Layout of PRINTER CONTROL P.C. Board

43W30532 1/1

APPLICATION

REVISIONS



PC Board	442U77432
Parts List	44W77607

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH

CHECKED BY | TRACED BY | SCALE

APPROVED BY | DRAWN BY

26

TITLE
R-Z18-Z2 PRINTER CONTROL CIRCUIT DIAGRAM

DRAWING No.
43W30532 1/1

DEP

ANRITSU CORP.

3-269

No 0023-1985.08

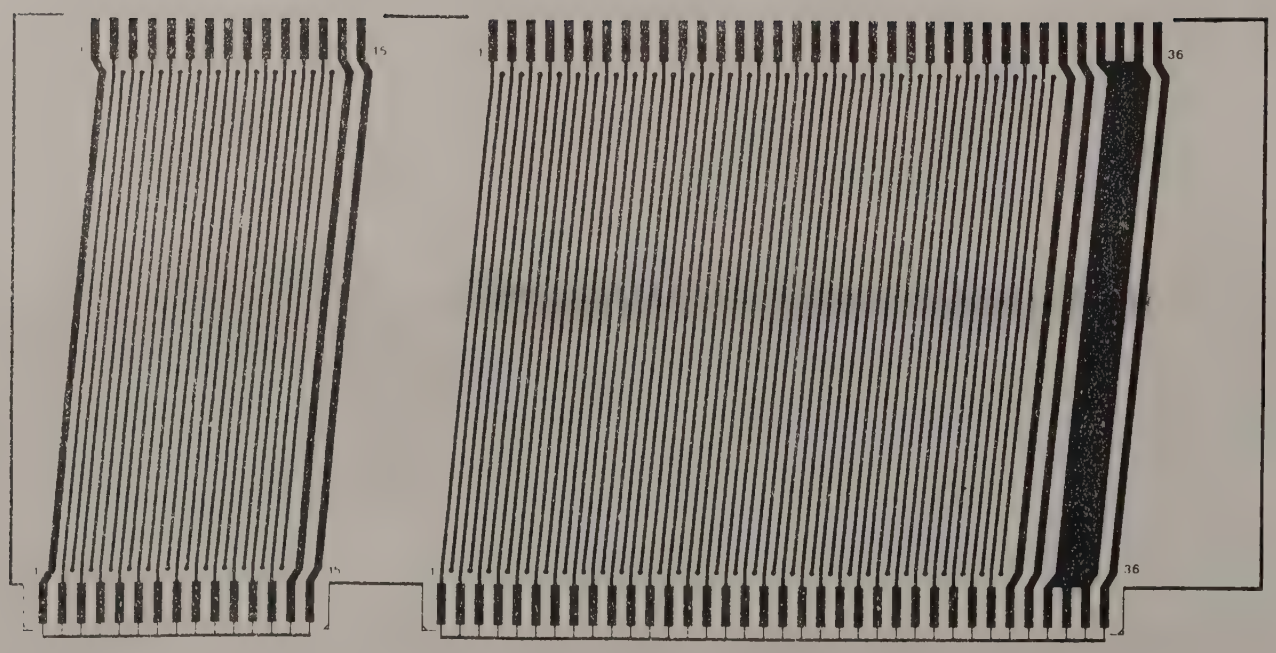


Fig. 3-190 Pattern Layout of R-Z1 EXTENDER P.C. Board

SECTION 4

REPLACEABLE PARTS

4.1 Introduction

This section contains information about ordering replacement parts. Tables 4-2 and 4-3 show circuit references (hereafter: CKT REF) and abbreviations used for items in the Parts Lists. The quantity of each item in the Parts List is "one" unless a quantitative description is given in the "NOTE" column.

4.2 Ordering Information

Upon ordering parts, please give the following descriptions by referring to the PARTS LIST.

Table 4-1

	Item	Example
(1)	Name of instrument	Digital Transmission Analyzer Transmitter ME520B
(2)	Name of part	Part of CPU, Z1
(3)	CKT REF	R1
(4)	Name of part	ARD25T 103J Note: Part name is given in parentheses ( ) in the P.L. (Parts List). Parts with asterisks* are those that require factory adjustment upon repairing. When ordering a part with asterisk, give full description of the part.
(5)	Quantity	1
(6)	Serial No. of instrument	M31257

4.3 Circuit References and Abbreviations Used in Parts List

(1) Circuit references

Table 4-2

AT:	Attenuator	K:	Relay	Q:	Transistor, diode, IC, rectifier	V:	Neon lamp, vacuum tube
C:	Capacitor	L:	Coil, microinductor	R:	Resistor	X:	Crystal OSC
F:	Fuse	M:	Meter, timer	S:	Switch	Z:	Unit
J:	Jack, plug, connector	P:	Lamp	T:	Transformer		

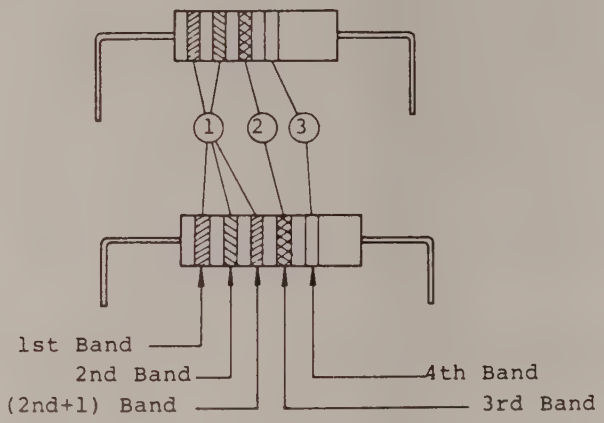
(2) Abbreviations

Table 4-3

A:	amperes	Multi:	multiplying
Att, R var:	variable attenuator using film elements	N-ch:	N-channel
		non-lin:	non-linear taper
BL:	boundary layer	Non-pol:	non polarity
Cer:	ceramic	NPN:	negative-positive-negative
CF:	carbon film	Ω:	ohms
Comp:	composition	p:	pico (x 10^{-12})
CRT:	cathode-ray tube	Plast:	plastic film
Di:	diode	PMTR:	potentiometer
DIP:	dual in-line package	PNP:	positive-negative-positive
Elect:	electrolytic aluminum	p-p:	peak-to-peak value
F:	farad	RFC:	RF choke
FET:	field-effect transistor	R-lamp:	resistor lamp
G:	ground	rms:	effective value (root-mean-square)
Ge:	germanium	SBD:	Schottky barrier diode
H:	henry	SCR:	silicon-controlled rectifier
Hz:	hertz	Si:	silicon
IC:	integrated circuit	SRD:	step-recovery diode
IEC:	Conforms to IEC Safety Standards.	Tant:	tantalum
J-FET:	junction FET	TM:	time-lag
k:	kilo (x 10^{3})	Tr:	transistor
LED:	light-emitting diode	Trans:	transformer
M:	mega (x 10^{6})	μ:	micro (x 10^{-6})
m:	milli (x 10^{-3})	V:	volt
MF:	metallized film	Var:	variable
MOS-FET:	metal-oxide semiconductor FET	WW:	wire-wound
M paper:	metallized paper	XTAL:	crystal
M plast:	metallized plastic film		

4.4 Reading Capacitance/Resistance

(1) Reading resistance



	①		②	③
COLOR	Figure		Multiplier	Tolerance
	1st	2nd	3rd	4th
Black	0	0	$x10^0$	-
Brown	1	1	$x10^1$	-
Red	2	2	$x10^2$	-
Orange	3	3	$x10^3$	-
Yellow	4	4	$x10^4$	-
Green	5	5	$x10^5$	±0.5%
Blue	6	6	$x10^6$	-
Purple	7	7	$x10^7$	-
Grey	8	8	$x10^8$	-
White	9	9	$x10^9$	-
Gold	-	-	$x10^{-1}$	±5%
Silver	-	-	$x10^{-2}$	±10%
-----	-	-		±20%

For Examples:

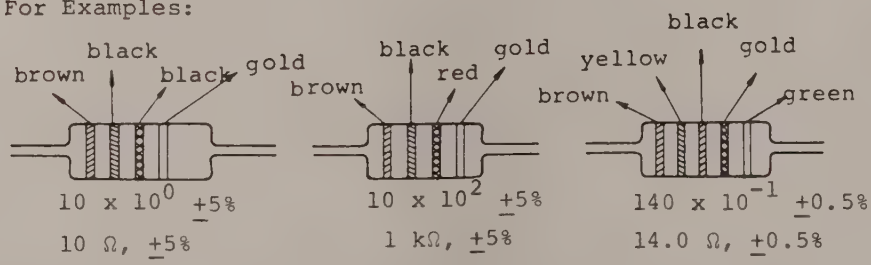
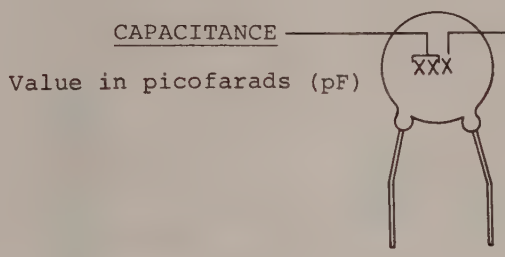


Fig. 4-1 Reading Resistance

(2) Reading capacitance

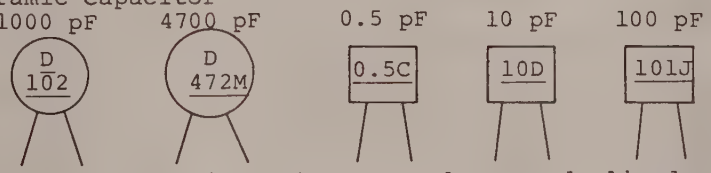


EXAMPLES: 103 = 10,000 pF = 10^{-8} F or 0.01 µF
302 = 3,000 pF = $3x10^{-9}$ F or 0.003 µF
676 = 67,000,000 pF = $67x10^{-6}$ F or 67 µF

(a) Ceramic and polyester capacitors

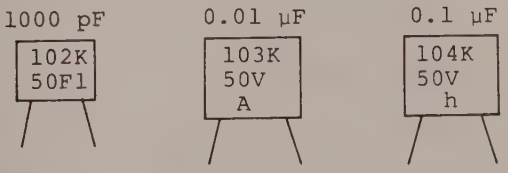
Indication	0.5	1	10	101	102	103	104
Capacity	0.5 pF	1 pF	10 pF	100 pF	1000 pF	0.01 µF	0.1 µF

Example:
Ceramic Capacitor



Capacity values are always underlined.

Polyester Capacitor



(b) Tantalum, metallized, and electrolytic capacitors

Indication	OR47	010	100	101
Capacity	0.47 µF	1 µF	10 µF	100 µF

Fig. 4-2 Reading Capacitance

4.5 Replaceable Parts List

Table 4-4 Parts List Table

SCHEMATIC NO.	Circuit Diagram Name	Z NO.	Parts List NO.
---------- Transmitter ----------			
1	ME520B Transmitter		44W 84790
2	CPU	Z1	44W 84791
3	CLOCK	Z2	44W 84792
4	PATTERN GENERATOR	Z3	44W 84793
5	OUTPUT AMP CMI SHAPER	Z5 Z8	44W 84794 44W 84797
6	DISPLAY	Z6	44W 84795
7	POWER SUPPLY	Z7	44W 84796
8	GP-IB	Z9	44W 84798
9	MOTHERBOARD	Z10	44W 84799
---------- Receiver ----------			
10	ME520B Receiver		44W 84800
11	INPUT	Z4	44W 84801
12	CMI	Z5	44W 84802
13	AMI/HDB3	Z6	44W 84803
14	REGENERATOR	Z7	44W 84804
15	WORD	Z8	44W 84805
16	PLL	Z9	44W 84806
17	JITTER	Z10	44W 84807
18	COUNTER	Z11	44W 84808
19	CPU	Z12	44W 84809

Table 4-4 Parts List Table (Cont.)

SCHEMATIC NO.	Circuit Diagram Name	Z NO.	Parts List NO.
----------	Receiver (Cont.) ----------		
20	DISPLAY	Z14	44W 84810
21	GP-IB	Z15	44W 84811
22	POWER SUPPLY	Z16	44W 84812
23	MOTHERBOARD	Z17	44W 84813
24	PRINTER UNIT		44W 77082
25	PRINTER INTERFACE		44W 77606
26	PRINTER CONTROL		44W 77607

Parts List : ME520B TRANSMITTER

CKT REF	DESCRIPTION	RATING		NOTE
C 1	M Plast, (ECW-S25255JZ(7))	2.5μF,±5%,250V		
E 1	Terminal,(A-12)			
E 2	Terminal stand, (500/1231DS)			
E 3	Terminal stand, (500/1231DS)			
F 1	Fuse,(T3.15A250V)	3.15A,250V	90-138V	
	Fuse,(T2A250V)	2A,250V	180-250V	
F 2	Fuse,(T3.15A250V)	3.15A,250V	90-138V	
	Fuse,(T2A250V)	2A,250V	180-250V	
G 1	Fan,(FBK08A12LZ)	DC12V		
G 2	Fan,(FBK08A12LZ)	DC12V		
J 1	Inlet,(8843-2SPFL4/364)			
J 2	Jack,(1490R)	4P		
J 3	Not assigned			
J 4	Not assigned			
J 5	Not assigned			
J 6	Jack,(DF1-8S-2.5R24)			
J 7	Panel jack, (BNC-PJ1-NI)			
J 8	Receptacle,(BNC-R-NI)			
J 9	Receptacle,(BNC-R-NI)			
J10	Not assigned			
J11	Receptacle,(BNC-R-NI)			
J12	Receptacle,(BNC-R-NI)			
J13	Jack,(DF1-2S-2.5R24)			
J14	Jack,(DF1-2S-2.5R24)			
J15	Not assigned			
J16	Not assigned			
J17	Jack,(DF1-3S-2.5R24)			
J18	Jack,(DF1-3S-2.5R24)			
J19	Jack,(DF1-2S-2.5R28)			
J20	Jack,(DF1-2S-2.5R28)			
J21	Not assigned			
J22	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

Parts List : ME520B TRANSMITTER

CKT REF	DESCRIPTION	RATING	NOTE
J23	Not assigned		
J24	Plug,(27DP-LP-1.5)		
J25	Plug,(27DP-LP-1.5)		
J26	Jack,(DF1-2S-2.5R24)		
J27	Jack,(DF1-2S-2.5R24)		
J28	Not assigned		
J29	Not assigned		
J30	Not assigned		
J31	Not assigned		
J32	Plug,(BNC-P.3C-2V)		
J33	Jack,(DF1-2S-2.5R24)		
Q 1	Surge absorber, (ERZ-C14DK471)		
Q 2	IC,(μPC16312H)		
Q 3	IC,(μPC14312H)		
S 1	Switch,(SDU3PE)		
V 1	Neon lamp,(BNS-3C)		
Z 1	CPU CIRCUIT		
Z 2	CLOCK GENERATOR		
Z 3	PATTERN GENERATOR		
Z 4	OPTION CLOCK		
Z 5	OUTPUT CIRCUIT		
Z 6	DISPLAY CIRCUIT		
Z 7	POWER SUPPLY		
Z 8	CMI SHAPER		
Z 9	GP-IB INTERFACE		
Z10	MOTHER BOARD		
Z11	NOISE FILTER, (MBW-1203-22)		
Z12	NOISE FILTER, (MBW-1103-22)		

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z1, CPU

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Tant,(CS02H1C220M)	22μF,±20%,16V		
C 2	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 3	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Not assigned			
C 6	Not assigned			
C 7	Elect,(CE04W1E471)	470μF,±20%,25V		
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 9	Elect,(CE02W1A102)	1000μF,±20%,10V		
C10	Tant,(CS02H1D2R2M)	2.2μF,±20%,20V		
C11 to C25	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Plug, (HIF3-26P-2.54DS)	26P		
J 2	Plug, (HIF3-34P-2.54DS)	34P		
M 1	Not assigned			
Q 1	IC,(LH0080A)			
Q 2	IC,(74LS138)			
Q 3	IC,(74LS08)			
Q 4	Not assigned			
Q 5	Not assigned			
Q 6	IC,(EPROM 16Kx8-25N)			
Q 7	IC,(EPROM 16Kx8-25N)			
Q 8	IC,(TC5564APL-15)			
Q 9	IC,(7432)			
Q10	IC,(74LS32)			
Q11	IC,(74LS10)			
Q12	Not assigned			
Q13	Not assigned			
Q14	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q15	Di,(1S953)			
Q16	Not assigned			
Q17	IC,(7404)			
Q18	Not assigned			
Q19	IC,(TL7705CP-B)			
Q20	Not assigned			
Q21	Not assigned			
Q22	IC,(μPD8253C-2)			
Q23	IC,(μPD8259AC-2)			
Q24	Di,(1S953)			
Q25	Di,(1S953)			

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z1, CPU

CKT REF	DESCRIPTION	RATING		NOTE
Q26	IC,(74LS138)			
Q27	IC,(μPD8279C-2)			
Q28	IC,(SN74LS541N)			
Q29	IC,(SN74LS541N)			
Q30	IC,(SN74LS541N)			
Q31	Not assigned			
Q32	Not assigned			
Q33	Not assigned			
Q34	Not assigned			
Q35	Not assigned			
Q36	IC,(74LS138)			
Q37	IC,(74LS138)			
Q38	IC,(SN74LS541N)			
Q39	IC,(74LS245)			
Q40	IC,(74LS74A)			
Q41	IC,(74LS74A)			
Q42	IC,(μPC271C)			
Q43	IC,(TC4013BP)			
Q44	IC,(TC4001BP)			
Q45	Di,(1S953)			
R 1	Not assigned			
R 2	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 3	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R 4	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R 5	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 6	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 7	Not assigned			
R 8	Not assigned			
R 9	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R10	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R11	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R12	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R13	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R14	Not assigned			
R15	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R16	Not assigned			
R17	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R18	CF,(ARD25T*.J)	470Ω to 1kΩ,±5%, 1/4W		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	CF,(ARD25T102J)	1kΩ,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z1, CPU

CKT REF	DESCRIPTION	RATING		NOTE
R21	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R22	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R23	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R24	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R25	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R26	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R27	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R28	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R29	CF,(ARD25T1R0J)	1Ω,±5%,1/4W		
R30	CF,(ARD25T * J)	1 to 10Ω,±5%,1/4W		Q'ty 0 or 1, *
R31	MF,(RN14K2E3651D)	3.65kΩ,±0.5%,1/4W		
R32	CF,(ARD25T562J)	5.6kΩ,±5%,1/4W		
R33	CF,(ARD25T562J)	5.6kΩ,±5%,1/4W		
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R38	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
S 1	Dip switch,(DIP-A(8))			
S 2	Dip switch,(DIP-A(8))			
S 3	Dip switch,(DIP-A(8))			
Z 1	XTAL OSC,(TOC-706A)	4.096MHz		
Z 2	Not assigned			
Z 3	LITHIUM BATTERY (BR3032-1GFR)			
Z 4	LITHIUM BATTERY (BR3032-1GM)			

( ): Manufacturer's part number
* : Selected at factory

M-1
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Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CC924CH1H470J)	47pF,±5%,50V		
C 2	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 3	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 4	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 5	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 6	Not assigned			
C 7	Elect,(CE04W1A470)	47μF,±20%,10V		
C 8	Elect,(CE04W1A470)	47μF,±20%,10V		
C 9	Elect,(CE04W1A470)	47μF,±20%,10V		
C10	Elect,(CE04W1A470)	47μF,±20%,10V		
C11	Not assigned			
C12	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C13	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C14	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C15	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C16	Not assigned			
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C20	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C22	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C24	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C27	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C28	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C29	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C30	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C31	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C32	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C33	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V		
C34	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C35	Elect,(CE04W1V100)	10μF,±20%,35V		
C36	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C37	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C38	Elect,(CE04W1V100)	10μF,±20%,35V		
C39	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C40	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C41	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C42	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C43	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C44	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C45	Elect,(CE04W1V100)	10μF,±20%,35V		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C48	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C49	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C50	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C51	Cer,(CC45CK1H0R5CY)	0.5pF,±0.25pF,50V		
C52	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C53	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C54	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C55	Elect,(CE04W1V100)	10μF,±20%,35V		
C56	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C57	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C58	Not assigned			
C59	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C60	Plast,(ECQ-P1 562FZ)	5600pF,±1%,100V		
C61	Plast,(ECQ-P1 362FZ)	3600pF,±1%,100V		
C62	Cer,(RPE111CH751G50)	750pF,±2%,50V		
C63	Plast,(ECQ-P1 202FZ)	2000pF,±1%,100V		
C64	Plast,(ECQ-P1 132FZ)	1300pF,±1%,100V		
C65	Cer,(RPE111CH271G50)	270pF,±2%,50V		
C66	Cer,(RPE111CH471G50)	470pF,±2%,50V		
C67	Cer,(RPE111CH301G50)	300pF,±2%,50V		
C68	Cer,(CC924CH1H680J)	68pF,±5%,50V		
C69	Cer,(RPE111CH121G50)	120pF,±2%,50V		
C70	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C71	Cer,(CC924CH1H150J)	15pF,5%,50V		
C72	Cer,(CC924CH1H560J)	56pF,±5%,50V		
C73	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C74	Cer,(CC924CH1H070D)	7pF,±0.5pF,50V		
C75	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C76	Cer,(CC924CH1H200J)	20pF,±5%,50V		
C77	Cer,(CC924CH1H040D)	4pF,±0.5pF,50V		
C78	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V		
C79	Cer,(CC45CK1H0R5CY)	0.5pF,±0.25pF,50V		
C80	Not assigned			
C81	Elect,(CE04W1A101)	100μF,±20%,10V		
C82	Elect,(CE04W1A101)	100μF,±20%,10V		
C83	Cer,(CK924F1H104Z)	0.1μF,+80 -20%,50V		
C84	Cer,(CK924F1H104Z)	0.1 μF,+80 -20%,50V		
C85	Cer,(CK924F1H104Z)	0.1μF,+80 -20%,50V		
C86	Plast,(ECQ-P1 562FZ)	5600pF,±1%,100V		
C87	Plast,(ECQ-P1 362FZ)	3600pF,±1%,100V		
C88	Cer,(RPE111CH751G50)	750pF,±2%,50V		
C89	Plast,(ECQ-P1 202FZ)	2000pF,±1%,100V		
C90	Plast,(ECQ-P1 132FZ)	1300pF,±1%,100V		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
C91	Cer,(RPE111CH271G50)	270pF,±2%,50V		
C92	Cer,(RPE111CH471G50)	470pF,±2%,50V		
C93	Cer,(RPE111CH301G50)	300pF,±2%,50V		
C94	Cer,(CC924CH1H680J)	68pF,±5%,50V		
C95	Cer,(RPE111CH121G50)	120pF,±2%,50V		
C96	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C97	Cer,(CC924CH1H150J)	15pF,±5%,50V		
C98	Cer,(CC924CH1H560J)	56pF,±5%,50V		
C99	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C100	Cer,(CC924CH1H070D)	7pF,±0.5pF,50V		
C101	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C102	Cer,(CC924CH1H200J)	20pF,±5%,50V		
C103	Cer,(CC924CH1H040D)	4pF,±0.5pF,50V		
C104	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C105	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C106	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C107	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C108	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C109	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C110	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C111	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C112	Cer,(RPE114C105M50)	1μF,±20%,50V		
C113	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C114	Cer,(RPE114C105M50)	1μF,±20%,50V		
C115	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C116	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C117	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C118	Cer,(CC924CH1H331J)	330pF,±5%,50V		
C119	Not assigned			
C120	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C121	Not assigned			
C122	Cer,(CK924C1H222M)	2200pF,±20%,50V		
C123	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C124	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C125	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C126	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C127	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C128	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C129	Not assigned			
C130	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C131	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C132	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C133	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C134	Cer,(CK924F1H104Z)	0.1μF,+80 -20%,50V		
C135	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
C136	Not assigned			
C137	Cer,(CC924CH1H820J)	82pF,±5%,50V		
C138	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C139	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C140	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C141	Cer,(CC924CH1H150J)	15pF,±5%,50V		
C142	Cer,(CC924CH1H150J)	15pF,±5%,50V		
C143	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C144	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C145	Tant,(CS-E0J470M)	47μF,±20%,6.3V		
C146	Cer,(CC924CH1H331J)	330pF,±5%,50V		
C147	Tant,(CS-E0J470M)	47μF,±20%,6.3V		
C148	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C149	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C150	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C151	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C152	Tant,(CS-E0J470M)	47μF,±20%,6.3V		
C153	Tant,(CS-E0J470M)	47μF,±20%,6.3V		
C154	Tant,(CS-E0J470M)	47μF,±20%,6.3V		
C155	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C156	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C157	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C158	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C159	Cer,(CC924CH1H820J)	82pF,±5%,50V		
C160	Cer,(CC924CH1H101J)	100pF,±5%,50V		
C161	Cer,(CC924CH1H470J)	47pF,±5%,50V		
C162	Elect,(CE04W1A470)	47μF,±20%,10V		
C163	Elect,(CE04W1A470)	47μF,±20%,10V		
C164 to C188	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C189	Elect,(CE04W1E101)	100μF,±20%,25V		
C190	Elect,(CE04W1E101)	100μF,±20%,25V		
C191	Elect,(CE04W1A101)	100μF,±20%,10V		
C192	Elect,(CE04W1A101)	100μF,±20%,10V		
C193	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C194	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C195	Not assigned			
C196	Not assigned			
C197	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C198	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C199	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C200	Elect,(CE04W1E101)	100μF,±20%,25V		
C201	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C202	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C203	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
C204	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C205	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C206	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C207	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C208	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C209	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Plug,(DF1-2P-2.5DSA)	2P		
J 2	Receptacle,(BNC-R-NI)			
J 3	Plug,(DF1-2P-2.5DSA)	2P		
J 4	Receptacle, (27DP-R-PC-1)			
J 5	Plug, (HIFJ-16P-2.54DSA)	16P		
J 6	Plug,(DF1-5P-2.5DSA)	5P		
J 7	Plug,(DF1-5P-2.5DSA)	5P		
K 1	Reed relay,(PG2A-05D)			
K 2	Reed relay,(PG2A-05D)			
K 3	Reed relay,(PG2A-05D)			
K 4	Reed relay,(PG2A-05D)			
K 5	Reed relay,(PG2A-05D)			
K 6	Reed relay,(PG2A-05D)			
K 7	Reed relay,(NR-SD-5V)			
L 1 to L 12	Not assigned			
L 13	Coil,(LH1-562K)	5600μH		
L 14	Coil,(LH1-562K)	5600μH		
L 15	Coil,(LH1-272K)	2700μH		
L 16	Coil,(LH1-182K)	1800μH		
L 17	Coil,(LH1-182K)	1800μH		
L 18	Coil,(LH1-102K)	1000μH		
L 19	Coil,(LF8-471K)	470μH		
L 20	Coil,(LF8-471K)	470μH		
L 21	Coil,(LF8-221K)	220μH		
L 22	Coil,(LF8-101K)	100μH		
L 23	Coil,(LF8-101K)	100μH		
L 24	Coil,(LF8-560K)	56μH		
L 25	Coil,(TP0206-470K)	47μH		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
L26	Coil,(TP0206-470K)	47μH		
L27	Coil,(TP0206-270K)	27μH		
L28	Coil,(TP0206-270K)	27μH		
L29	Coil,(TP0206-270K)	27μH		
L30	Coil,(TP0206-150K)	15μH		
L31	Not assigned			
L32	Not assigned			
L33	Not assigned			
L34	Coil,(LH1-562K)	5600μH		
L35	Coil,(LH1-562K)	5600μH		
L36	Coil,(LH1-272K)	2700μH		
L37	Coil,(LH1-182K)	1800μH		
L38	Coil,(LH1-182K)	1800μH		
L39	Coil,(LH1-102K)	1000μH		
L40	Coil,(LF8-471K)	470μH		
L41	Coil,(LF8-471K)	470μH		
L42	Coil,(LF8-221K)	220μH		
L43	Coil,(LF8-101K)	100μH		
L44	Coil,(LF8-101K)	100μH		
L45	Coil,(LF8-560K)	56μH		
L46	Not assigned			
L47	Not assigned			
L48	Not assigned			
L49	Not assigned			
L50	Not assigned			
L51	Coil,(TP0206-470K)	47μH		
L52	Coil,(TP0206-470K)	47μH		
L53	Coil,(TP0206-270K)	27μH		
L54	Coil,(TP0206-270K)	27μH		
L55	Coil,(TP0206-270K)	27μH		
L56	Coil,(TP0206-150K)	15μH		
L57	Not assigned			
L58	Not assigned			
L59	Not assigned			
L60	Coil,(EL0909SKI-102K)	1000μH		
L61	Coil,(PS0810-151K)	150μH		
L62	Coil,(SP0408-100K)	10μH		
L63	Coil,(SP0408-R68K)	0.68μH		
L64	Coil,(SP0408-R15K)	0.15μF,±10%		
L65	Aircore coil, (34L7443JC)	43nH		
L66	Not assigned			
L67	Coil,(LF8-100K)	10μH		
L68	Coil,(LF8-100K)	10μH		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Q 1	IC,(74LS138)			
Q 2	IC,(74LS541)			
Q 3	IC,(μPD8253C-2)			
Q 4	IC,(74LS245)			
Q 5	IC,(SN74ALS574N)			
Q 6	IC,(74LS32)			
Q 7	IC,(SN74ALS574N)			
Q 8	IC,(74LS04)			
Q 9	IC,(74LS293)			
Q10	IC,(74LS00)			
Q11	IC,(HA17012PC)			
Q12	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
Q13	IC,(μPC151C)			
Q14	IC,(SN74ALS574N)			
Q15	IC,(SN74ALS574N)			
Q16	IC,(HD10124)			
Q17	IC,(74LS08)			
Q18	IC,(74LS08)			
Q19	Not assigned			
Q20	IC,(HD10102)			
Q21	IC,(HD10124)			
Q22	IC,(HD10124)			
Q23	IC,(MC10103L)			
Q24	Tr,(2SA836)			
Q25	Tr,(2SA836)			
Q26	Tr,(2SA836)			
Q27	Tr,(2SA836)			
Q28	Not assigned			
Q29	Di,(1S953)			
Q30	Di,(1S953)			
Q31	Di,(1S953)			
Q32	Di,(1S953)			
Q33	Not assigned			
Q34	IC,(TD62003P)			
Q35	IC,(TD62002P)			
Q36	IC,(MC12040L)			
Q37	Not assigned			
Q38	Not assigned			
Q39	Not assigned			
Q40	Not assigned			
Q41	Not assigned			
Q42	Not assigned			
Q43	Not assigned			
Q44	Not assigned			
Q45	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Q46	Not assigned			
Q47	Not assigned			
Q48	Not assigned			
Q49	IC,(HD10116)			
Q50	IC,(HD10136)			
Q51	Not assigned			
Q52	Not assigned			
Q53	Not assigned			
Q54	Not assigned			
Q55	Not assigned			
Q56	IC,(HD10125)			
Q57	IC,(μPC1651G)			
Q58	IC,(MC10H116L)			
Q59	IC,(MC10H116L)			
Q60	IC,(HD10231)			
Q61	IC,(μPC1651G)			
Q62	IC,(μPC1651G)			
Q63	IC,(MC10H102L)			
Q64	IC,(MC10H102L)			
Q65	Di,breakdown,(RD1.7EB)	2.5 to 2.9V,400mW		
Q66	IC,(HD10231)			
Q67	IC,(HD10131)			
Q68	Not assigned			
Q69	Not assigned			
Q70	Not assigned			
Q71	IC,(μPC16305H)			
Q72	Not assigned			
Q73	Not assigned			
Q74	Not assigned			
Q75	Not assigned			
Q76	IC,(MC10H102L)			
Q77	IC,(MC10H102L)			
Q78	IC,(MC10H102L)			
Q79	Not assigned			
Q80	Tr,(2SC1907)			
Q81	Tr,(2SC1907)			
Q82	Tr,(2SC1907)			
Q83	Tr,(2SC1907)			
Q84	Tr,(2SC1907)			
Q85	Tr,(2SC1907)			
Q86	Not assigned			
Q87	Tr,(2SC1907)			
Q88	Tr,(2SC1907)			
Q89	Tr,(2SC1907)			
Q90	Tr,(2SC1907)			

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Q91	Tr,(2SC1907)			
Q92	Tr,(2SC1907)			
Q93	Not assigned			
Q94	Not assigned			
Q95	Not assigned			
Q96	Not assigned			
Q97	Not assigned			
Q98	IC,(HA3-2525-5)			
Q99	IC,(HA3-2525-5)			
Q100	IC,(74LS04)			
Q101	IC,(TD62003P)			
Q102	Not assigned			
Q103	Not assigned			
Q104	Not assigned			
Q105	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q106	Di,(1S953)			
Q107	IC,(HA3-2525-5)			
Q108	Not assigned			
Q109	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q110	Di,(1S953)			
Q111	Not assigned			
Q112	Not assigned			
Q113	Not assigned			
Q114	Not assigned			
Q115	Not assigned			
Q116	IC,(HA3-2525-5)			
Q117	Not assigned			
Q118	Not assigned			
Q119	Tr,(2SA836)			
Q120	Tr,(2SA836)			
Q121	Tr,(2SA836)			
Q122	Tr,(2SA836)			
Q123	Tr,(2SA836)			
Q124	Not assigned			
Q125	Not assigned			
Q126	Di,(FC52M)			
Q127	Di,(FC52M)			
Q128	Di,(FC52M)			
Q129	Di,(FC52M)			
Q130	Di,(FC52M)			
Q131	Di,(FC52M)			
Q132	Di,(FC52M)			
Q133	Di,(FC52M)			
Q134	Di,(FC52M)			
Q135	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Q136	IC,(MC1648P)			
Q137	IC,(MC1648P)			
Q138	IC,(MC1648P)			
Q139	IC,(MC1648P)			
Q140	IC,(MC1648P)			
Q141	IC,(MC1648P)			
Q142	Not assigned			
Q143	IC,(μPC277C)			
Q144	IC,(μPC277C)			
Q145	IC,(μPC277C)			
Q146	Not assigned			
Q147	Not assigned			
Q148	Not assigned			
Q149	Not assigned			
Q150	Not assigned			
Q151	Not assigned			
Q152	Not assigned			
Q153	Not assigned			
Q154	Not assigned			
Q155	IC,(MC10H102L)			
Q156	IC,(HD10101)			
Q157	IC,(MC10H102L)			
Q158	IC,(HD10101)			
Q159	IC,(MC10H102L)			
Q160	Not assigned			
Q161	Not assigned			
Q162	Not assigned			
Q163	Di,(1SS99)			
Q164	Di,(1S953)			
Q165	Di,(1S953)			
Q166	Di,(1S953)			
Q167	Di,(1S953)			
Q168	IC,(MC10H116L)			
Q169	IC,(μPC451C)			
Q170	Tr,(2SA836)			
Q171	IC,(μPD5200C)			*ES20B, OPTION 04
Q172	Not assigned			
Q173	IC,(74LS112)			
Q174	IC,(74LS00)			
Q175	IC,(MC10H102L)			
Q176	IC,(HD10231)			
Q177	IC,(HD10131)			
Q178	Not assigned			
Q179	Di,(1S953)			
Q180	IC,(μPC251C)			

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Q181	IC,(74LS191)			
Q182	IC,(74LS191)			
Q183	IC,(74LS191)			
Q184	IC,(HA17012PC)			
Q185	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
Q186	IC,(μPC157C)			
Q187	Not assigned			
Q188	IC,(LM360N)			
Q189	IC,(74LS14)			
Q190	IC,(74LS86)			
Q191	IC,(74LS74A)			
Q192	IC,(74LS27)			
Q193	IC,(74LS74A)			
Q194	IC,(74LS393)			
Q195	Not assigned			
Q196	IC,(PC14305H)			
Q197	Not assigned			
Q198	Not assigned			
Q199	Not assigned			
Q200	IC,(HD10116)			
Q201	IC,(PC16305H)			
R 1	MF,(RN14K2E6810D)	681 ,±0.5%,1/4W		
R 2	Var,MF,(RJ-6P 1k)	1k ,1/2W		
R 3	MF,(RN14K2E5621D)	5.62k ,±0.5%,1/4W		
R 4	MF,(RN14K2E6191D)	6.19k ,±0.5%,1/4W		
R 5	MF,(RN14K2E2001D)	2.0k ,±0.5%,1/4W		
R 6	MF,(RN14K2E2001D)	2.0k ,±0.5%,1/4W		
R 7	CF,(ARD25T102J)	1k ,±5%,1/4W		
R 8	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 9	Not assigned			
R 10	CF,(ARD25T152J)	1.5k ,±5%,1/4W		
R 11	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 12	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 13	Single in-line array, (IHR-6-222JA)	2.2k x 6,1/8W		
R 14	CF,(ARD25T102J)	1k ,±5%,1/4W		
R 15	CF,(ARD25T152J)	1.5k ,±5%,1/4W		
R 16	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 17	Single in-line array, (IHR-8-103JA)	10k x 8,1/8W		
R 18	Single in-line array, (IHR-8-222JA)	2.2k x 8,1/8W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R19	Single in-line array, (IHR-8-222JA)	2.2k x 8,1/8W		
R20	MF,(RN14K2E1003D)	100k ,±0.5%,1.4W		
R21	MF,(RN14K2E1003D)	100k ,±0.5%,1.4W		
R22	MF,(RN14K2E1003D)	100k ,±0.5%,1/4W		
R23	MF,(RN14K2E1003D)	100k ,±0.5%,1/4W		
R24	Not assigned			
R25	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R26	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R27	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R28	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R29	Not assigned			
R30	Single in-line array, (IHR-6-272JA)	2.7kΩ x 6,1/8W		
R31	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R32	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R33	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R34	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R35	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R36	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R37	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R38	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R39	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R40	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R41	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R42	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R43	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R44	CF,(ARD25T391J)	390 ,±5%,1/4W		
R45	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R46	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R47	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R48	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R49	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R50	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R51 to R60	Not assigned			

( ): Manufacturer's part number

* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R61 to R79	Not assigned			
R80	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R81	Not assigned			
R82	Not assigned			
R83	Not assigned			
R84	Not assigned			
R85	Not assigned			
R86	Not assigned			
R87	Not assigned			
R88	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R89	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R90	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R91	Not assigned			
R92	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R93	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R94	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R95	Not assigned			
R96	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R97	Not assigned			
R98	Not assigned			
R99	Not assigned			
R100	Not assigned			
R101	Not assigned			
R102	Not assigned			
R103	Not assigned			
R104	Not assigned			
R105	Not assigned			
R106	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R107	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R108 to R120	Not assigned			
R121	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R122	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R123	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R124	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R125	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R126	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R127	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R128	MF,(RN14K2D5490D)	549Ω,±0.5%,1/4W		
R129	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R130	CF,(ARD25T101J)	100Ω,±5%,1/4W		

( ): Manufacturer's part number

* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R131	MF,(RN14K2E1821D)	1.82k ,±0.5%,1/4W		
R132	CF,(ARD25T391J)	390 ,±5%,1/4W		
R133	CF,(ARD25T510J)	51 ,±5%,1/4W		
R134	CF,(ARD25T682J)	6.8k ,±5%,1/4W		
R135	CF,(ARD25T682J)	6.8k ,±5%,1/4W		
R136	CF,(ARD25T131J)	130 ,±5%,1/4W		
R137	CF,(ARD25T820J)	82 ,±5%,1/4W		
R138	CF,(ARD25T391J)	390 ,±5%,1/4W		
R139	Single in-line array, (IHR-4-391JA)	390 x 4,1/8W		
R140	CF,(ARD25T131J)	130 ,±5%,1/4W		
R141	Not assigned			
R142	CF,(ARD25T511J)	510 ,±5%,1/4W		
R143	CF,(ARD25T820J)	82 ,±5%,1/4W		
R144	CF,(ARD25T510J)	51 ,±5%,1/4W		
R145	CF,(ARD25T471J)	470 ,±5%,1/4W		
R146	MF,(RN14K2E8060D)	806 ,±0.5%,1/4W		
R147	MF,(RN14K2E2840D)	284 ,±0.5%,1/4W		
R148	CF,(ARD25T471J)	470 ,±5%,1/4W		
R149	CF,(ARD25T471J)	470 ,±5%,1/4W		
R150	CF,(ARD25T471J)	470 ,±5%,1/4W		
R151	Not assigned			
R152	Not assigned			
R153	CF,(ARD25T510J)	51 ,±5%,1/4W		
R154	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R155	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R156	CF,(ARD25T510J)	51 ,±5%,1/4W		
R157	CF,(ARD25T510J)	51 ,±5%,1/4W		
R158	CF,(ARD25T510J)	51 ,±5%,1/4W		
R159	Not assigned			
R160	CF,(ARD25T510J)	51 ,±5%,1/4W		
R161	CF,(ARD25T510J)	51 ,±5%,1/4W		
R162	CF,(ARD25T510J)	51 ,±5%,1/4W		
R163	CF,(ARD25T510J)	51 ,±5%,1/4W		
R164	CF,(ARD25T510J)	51 ,±5%,1/4W		
R165	CF,(ARD25T510J)	51 ,±5%,1/4W		
R166	Not assigned			
R167	CF,(ARD25T511J)	510 ,±5%,1/4W		
R168	CF,(ARD25T510J)	51 ,±5%,1/4W		
R169	CF,(ARD25T511J)	510 ,±5%,1/4W		
R170	CF,(ARD25T510J)	51 ,±5%,1/4W		
R171	Not assigned			
R172	Not assigned			
R173	Not assigned			
R174	Not assigned			

( ): Manufacturer's part number

* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R175	Not assigned			
R176	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R177	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R178	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R179	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R180	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R181	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R182	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R183	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R184	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R185	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R186	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R187	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R188	Not assigned			
R189	Not assigned			
R190	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R191	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R192	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R193	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R194	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R195	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R196	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R197	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R198	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R199	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R200	Var,MF,(RJ-6P 200Ω)	200Ω,1/2W		
R201	Not assigned			
R202	Not assigned			
R203	Not assigned			
R204	Not assigned			
R205	Not assigned			
R206	CF,(ARD25T102J)	1k ,±5%,1/4W		
R207	Not assigned			
R208	Not assigned			
R209	Single in-line array, (IHR-4-392JA)	3.9k x 4,1/8W		
R210	Single in-line array, (IHR-4-392JA)	3.9k x 4,1/8W		
R211	Single in-line array, (IHR-4-392JA)	3.9k x 4,1/8W		
R212 to R222	Not assigned			
R223	MF,(RN14K2E1001D)	1.0k ,±0.5%,1/4W		

( ): Manufacturer's part number

* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R224	MF,(RN14K2E2741D)	2.74kΩ,±0.5%,1/4W		
R225	MF,(RN14K2E82R5D)	82.5Ω,±0.5%,1/4W		
R226	MF,(RN14K2E7500D)	750Ω,±0.5%,1/4W		
R227	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R228	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R229	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R230	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R231	Not assigned			
R232	Not assigned			
R233	Not assigned			
R234	Not assigned			
R235	Not assigned			
R236	Not assigned			
R237	Not assigned			
R238	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R239	Not assigned			
R240	Not assigned			
R241	Not assigned			
R242	Not assigned			
R243	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R244	Not assigned			
R245	Not assigned			
R246	Not assigned			
R247	Not assigned			
R248	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R249	Not assigned			
R250	Not assigned			
R251	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R252	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R253	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R254	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R255	MF,(RN14K2E1101D)	1.1kΩ,±0.5%,1/4W		
R256	Not assigned			
R257	Not assigned			
R258	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R259	Not assigned			
R260	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R261	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R262	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R263	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R264	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R265	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R266	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R267	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W		
R268	CF,(ARD25T111J)	110Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R269	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R270	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R271	Not assigned			
R272	Not assigned			
R273	Not assigned			
R274	Not assigned			
R275	Not assigned			
R276	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R277	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R278	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R279	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R280	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R281	Not assigned			
R282	Not assigned			
R283	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R284	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R285	CF,(ARD25T183J)	18kΩ,±5%,1/4W		
R286	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R287	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R288	Not assigned			
R289	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R290	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R291	CF,(ARD25T183J)	18kΩ,±5%,1/4W		
R292	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R293	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R294	Not assigned			
R295	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R296	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R297	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R298	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R299	Not assigned			
R300	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R301	Not assigned			
R302	Not assigned			
R303	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R304	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R305	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R306	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R307	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R308	Not assigned			
R309	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R310	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R311	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R312	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
R313	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R314	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R315	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R316	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R317	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R318	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R319	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R320	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R321	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R322	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R323	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R324	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R325	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R326	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R327	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R328	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R329	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R330	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R331	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R332	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R333	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R334	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R335	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R336	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R337	Not assigned			
R338	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R339	CF,(ARD25T301J)	300Ω,±5%,1/4W		
R340	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R341	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R342	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R343	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R344	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R345	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R346	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R347	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R348	CF,(APD25T103J)	10kΩ,±5%,1/4W		
R349	Var,MF,(RJ-6P 500k)	500kΩ,1.2W		
R350	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R351	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R352	CF,(ARD25T105J)	1MΩ,±5%,1/4W		Q'ty 2
R353	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R354	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R355	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R356	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R357	CF,(ARD25T103J)	10kΩ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
R358	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R359 to R369	Not assigned			
R370	MF,(RN14K2E6490D)	649Ω,±0.5%,1/4W		
R371	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R372	MF,(RN14K2E3401D)	3.40kΩ,±0.5%,1/4W		
R373	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R374	MF,(RN14K2E3240D)	324Ω,±0.5%,1/4W		
R375	Not assigned			
R376	Not assigned			
R377	MF,(RN14K2E1212D)	12.1kΩ,±0.5%,1/4W		
R378	MF,(RN14K2E1051D)	1.05kΩ,±0.5%,1/4W		
R379	MF,(RN14K2E7501D)	7.50kΩ,±0.5%,1/4W		
R380	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R381	MF,(RN14K2E3240D)	324Ω,±0.5%,1/4W		
R382	MF,(RN14K2E3240D)	324Ω,±0.5%,1/4W		
R383	MF,(RN14K2E3240D)	324Ω,±0.5%,1/4W		
R384	Not assigned			
R385	Not assigned			
R386	Not assigned			
R387	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R388	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R389	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R390	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R391	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R392	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R393	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R394	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R395	Not assigned			
R396	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R397	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R398	Not assigned			
R399	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R400	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R401	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R402	Not assigned			
R403	Not assigned			
R404	MF,(RS2FB22 J)	22Ω,±5%,2W		
R405	MF,(RS2FB22 J)	22Ω,±5%,2W		
S 1	Switch,(ASID-2M)			
Z 1	XTAL OSC,(44X79277A)	16.384MHz		
Z 2	XTAL OSC,(44X79277B)	6.896MHz		
Z 3	XTAL OSC,(44X79277C)	22.912MHz		
Z 4	XTAL OSC,(44X79277D)	23.2107MHz		
Z 5	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Z 6	Not assigned			
Z 7	COIL,(7K9-23MTA)			
Z 8	COIL,(7K9-23MTA)			
Z 9	COIL,(7K9-23MTA)			
Z10	COIL,(7K9-23MTA)			
Z11	Not assigned			
Z12	Not assigned			
Z13	COIL,(7K9-68MTA)			
Z14	COIL,(7K9-68MTA)			
Z15	COIL,(7K9-139MTB)			
Z16	COIL,(7K9-139MTB)			
Z17	COIL,(7K9-68MTA)			
Z18	COIL,(7K9-68MTA)			
Z19	COIL,(7K9-139MTB)			
Z20	COIL,(7K9-139MTB)			

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E101)	100-F,±20%,25V		
C 2	Elect,(CE04W1E101)	100-F,±20%,25V		
C 3	Elect,(CE04W1E101)	100-F,±20%,25V		
C 4	Tant,(CS02H1E100M)	10-F,±20%,25V		
C 5	Cer,(CK924C1H103M)	0.01-F,±20%,50V		
C6 to C19	Not assigned			
C20 to C68	Cer,(CK924F1H104Z)	0.1-F,+80/-20%,50V		
J 1	Connector			
J 2	Connector			
J 3	Not assigned			
J 4	Plug,(DF1-2P-2.5DSA)	2P		
J 5	Receptacle, (27DP-LR-PC)			
J 6	Receptacle, (27DP-LR-PC)			
J 7	Plug,(27D-P-1.5)			
J 8 to J11	Receptacle, (27DP-LR-PC)			Option 04
Q 1	Di,(1SS97)			
Q 2	Di,(1SS97)			
Q 3	Not assigned			
Q 4	Not assigned			
Q 5	Di,(1SS97)			
Q 6	Di,(1SS97)			
Q 7	Tr,(2SC1010)			
Q 8	Tr,(2SA578)			
Q 9	Not assigned			
Q10	Di,(1S953)			
Q11	Di,(1S953)			
Q12	Di,(1S953)			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Not assigned			
Q18	IC,(74LS138)			
Q19	IC,(74LS541)			
Q20	IC,(SN74ALS574N)			

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
Q21	IC,(HD10124)			
Q22	IC,(HD10124)			
Q23	IC,(HD10101)			
Q24	Not assigned			
Q25	Not assigned			
Q26	IC,(MC10176L)			
Q27	IC,(HD10136)			
Q28	IC,(HD10102)			
Q29	IC,(HD10109)			
Q30	IC,(HD10131)			
Q31	IC,(uPC71A)			
Q32	IC,(HD10131)			
Q33	IC,(HD10105)			
Q34	IC,(HD10109)			
Q35	Not assigned			
Q36	IC,(SN74ALS574N)			
Q37	IC,(SN74ALS574N)			
Q38	IC,(SN74ALS574N)			
Q39	IC,(SN74ALS574N)			
Q40	IC,(HD10164)			
Q41	IC,(HD10164)			
Q42	IC,(HD10164)			
Q43	IC,(HD10164)			
Q44	IC,(MC10H131L)			
Q45	Not assigned			
Q46	Not assigned			
Q47	IC,(MC10138L)			
Q48	IC,(MC10138L)			
Q49	IC,(MC10138L)			
Q50	IC,(MC10138L)			
Q51	IC,(MC10138L)			
Q52	IC,(MC10138L)			
Q53	IC,(HD10102)			
Q54	IC,(HD10102)			
Q55	IC,(MC10H131L)			
Q56	Not assigned			
Q57	Not assigned			
Q58	Not assigned			
Q59	Not assigned			
Q60	IC,(SN74ALS574N)			
Q61	Not assigned			
Q62	Not assigned			
Q63	IC,(MC10216L)			
Q64	IC,(HD10231)			
Q65	IC,(HD100102)			

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
Q66	IC,(HD10110)			
Q67	IC,(HD10110)			
Q68	IC,(HD10131)			
Q69	IC,(HD100102)			
Q70	Not assigned			
Q71	IC,(HD10131)			
Q72	IC,(MC10176L)			
Q73	IC,(MC10176L)			
Q74	IC,(MC10176L)			
Q75	IC,(MC10176L)			
Q76	IC,(MC10113L)			
Q77	IC,(MC10113L)			
Q78	IC,(MC10113L)			
Q79	Not assigned			
Q80	IC,(HD10131)			
Q81	IC,(MC10H102L)			
Q82	IC,(MC10H131L)			
Q83	IC,(SN74ALS574N)			
Q84	IC,(SN74ALS574N)			
Q85	IC,(HD10107)			
Q86	IC,(MC10176L)			
Q87	IC,(MC10H102L)			
Q88	IC,(MC10176L)			
Q89	IC,(HD10136)			
Q90	IC,(HD10131)			
Q91	IC,(MC10H102L)			
Q92	IC,(HD10136)			
Q93	IC,(HD10136)			
Q94	IC,(HD10105)			
Q95	IC,(MC10H131L)			
Q96	IC,(MC10H102L)			
Q97	IC,(MC10H131L)			
Q98	IC,(HD10131)			
Q99	IC,(MC10H131L)			
Q100	IC,(HD10131)			
Q101	IC,(HD10107)			
Q102	IC,(MC10H105L)			
Q103	IC,(MC10H102L)			
Q104	IC,(MC10H102L)			
R 1	CF,(ARD25T391J)	390 ,±5%,1/4W		
R 2	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R 3	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 4	CF,(ARD25T391J)	390 ,±5%,1/4W		
R 5	CF,(ARD25T681J)	680 ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R 6	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R 7	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R 8	MF,(RN14K2E2741D)	2.74kΩ,±0.5%,1/4W		
R 9	Not assigned			
R10	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R11	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R12	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R13	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R14	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R15	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R16	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R17	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R18	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R19	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R20	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R21	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R22	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R23	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R24	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R25	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R26	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R27	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R28	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R29	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R30	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R31	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R32	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R33	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R34	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R35	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R36	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R37	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R38	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R39	CF,(ARD25T182J)	1.8kΩ,±5%,1/4W		
R40	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R41	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R42	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R43	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R44	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R45	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R46	Not assigned			
R47	Not assigned			
R48	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R49	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R50	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R51	CF,(ARD25T131J)	130 ,±5%,1/4W		
R52	Not assigned			
R53	CF,(ARD25T820J)	82..,±5%,1/4W		
R54	CF,(ARD25T391J)	390..,±5%,1/4W		
R55	CF,(ARD25T391J)	390..,±5%,1/4W		
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R58	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R59	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R60	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R61	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R62	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R63	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R66	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R67	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R68	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R69	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R70	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R71	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R72	Not assigned			
R73	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R74	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R75	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R76	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R77	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R78	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R79	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R80	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R81	Not assigned			
R82	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R83	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R84	Not assigned			
R85	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R86	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R87	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R88	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R89	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R90	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R91	Not assigned			
R92	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R93	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R94	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R95	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R96	CF,(ARD25T820J)	82..,±5%,1/4W		
R97	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R98	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R99	Not assigned			
R100	MF,(RN14K2E2492D)	24.9kΩ,±0.5%,1/4W		
R101	MF,(RN14K2E1001D)	1.0kΩ,±0.5%,1/4W		
R102	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R103	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R104	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R105	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R106	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R107	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R108	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R109	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R110	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R111	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R112	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R113	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R114	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R115	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R116	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R117	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R118	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R119	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R120	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R121	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R122	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R123	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R124	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R125	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R126	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R127	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R128	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R129	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R130	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R131	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R132	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R133	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R134	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R135	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R136	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R137	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R138	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R139	Not assigned			
R140	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R141	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R142	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R143	CF,(ARD25T333J)	33k..,±5%,1/4W		
R144	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R145	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R146	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R147	MF,(RN14K2E1271D)	1.27kΩ,±0.5%,1/4W		
R148	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R149	Not assigned			
R150	CF,(ARD25T820J)	82..,±5%,1/4W		
R151	CF,(ARD25T820J)	82..,±5%,1/4W		
R152	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R153	CF,(ARD25T681J)	680..,±5%,1/4W		
R154	CF,(ARD25T820J)	82..,±5%,1/4W		
R155	CF,(ARD25T820J)	82..,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-23, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R156	Not assigned			
R157	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R158	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R159	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R160	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R161	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R162	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R163	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R164	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R165	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R166	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R167	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R168	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R169	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R170	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R171	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R172	Not assigned			
R173	Not assigned			
R174	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R175	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R176	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R177	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R178	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R179	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R180	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R181	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R182	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R183	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R184	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R185	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R186	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R187	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R188	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R189	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R190	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R191	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R192	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R193	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R194	Not assigned			
R195	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R196	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R197	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R198	CF,(ARD25T100J)	10Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-23, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R199	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R200	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R201	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R202	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R203	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R204	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R205	Not assigned			
R206	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R207	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R208	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R209	Not assigned			
R210	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R211	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R212	CF,(ARD25T820J)	82Ω,±5%,1/4W		Option 04
R213	CF,(ARD25T131J)	130Ω,±5%,1/4W		Option 04
R214	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		Option 04
R215	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		Option 04
R216	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		Option 04
R217	CF,(ARD25T820J)	82Ω,±5%,1/4W		Option 04
R218	CF,(ARD25T131J)	130Ω,±5%,1/4W		Option 04

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-25, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C 2	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C 3	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C 4	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C 5	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C 6	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C 7	Cer,(CC924CH1H090D)	9pF,±0.5pF,50V		
C 8	Cer,(CC924CH1H270J)	27pF,±5%,50V		
C 9	Cer,(CC924CH1H070D)	70F,±0.5pF,50V		
C10	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C11	Elect,(CE04W1A101)	100uF,±20%,10V		
C12	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C13	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C14	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C15	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C16	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C17	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C18	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C19	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C20	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C21	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C22	Elect,(CE04W1V100)	10uF,±20%,35V		
C23	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C24	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C25	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C26	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C27	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C28	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C29	Cer,(DF553F102PY50)	1000pF,+100/-0%,50V		
C30	Elect,(CE04W1V100)	10uF,±20%,35V		
C31	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C32	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C33	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C34	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C35	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C36	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C37	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C40	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C41	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C42	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V		
C43	Elect,(CE04W1V100)	10uF,±20%,35V		
C44	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C45	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-25, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C47	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C48	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C49	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C52	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C53	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C54	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C55	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C56	Elect,(CE04W1V100)	10uF,±20%,35V		
C57 to C75	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C76	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C77	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C78	Elect,(CE04W1E101)	100uF,±20%,25V		
C79	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C80	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C81	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C82	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C83	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C84	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V		
C85	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C86	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C87	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C88	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C89	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C90	Elect,(CE04W1V100)	10uF,±20%,35V		
C91	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C92	Elect,(CE04W1E101)	100uF,±20%,25V		
C93	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C94	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C95	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
C96	Elect,(CE04W1V4R7)	4.7uF,±20%,35V		
C97	Not assigned			
C98	Elect,(CE04W1V100)	10uF,±20%,35V		
C99	Cer,(CK924F1H104Z)	0.1uF,+80 -20%,50V		
C100	Elect,(CE04W1A101)	100uF,±20%,10V		
C101	Elect,(CE04W1E101)	100uF,±20%,25V		
C102	Elect,(CE04W1E101)	100uF,±20%,25V		
C103	Elect,(CE04W1A101)	100uF,±20%,10V		
C104 to C132	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
C133	Noise filter, (ZFN5101-01R)	2000 to 7500pF,50V		
C134	Noise filter, (ZFN5101-01R)	2000 to 7500pF,50V		
C135	Noise filter, (ZFN5101-01R)	2000 to 7500pF,50V		
J 1	Receptacle, (BNC-R-NI)			
J 2	Receptacle, (BNC-R-NI)			
J 3	Receptacle, (BNC-R-NI)			
J 4	Receptacle, (BNC-R-NI)			
J 5	Receptacle, (BNC-R-NI)			
J 6	Receptacle, (BNC-R-NI)			
J 7	Receptacle, (BNC-R-NI)			
J 8	Receptacle, (BNC-R-NI)			
J 9	Receptacle, (BNC-R-NI)			
J 10	Receptacle, (BNC-R-NI)			
J 11	Not assigned			
J 12	Receptacle, (BNC-R-NI)			
J 13	Not assigned			
J 14	Plug,(DF1-2P-2.5DSA)	2P		
J 15	Plug,(DF1-2P-2.5DSA)	2P		
J 16	Plug,(27DP-LP-1.5)			
Q 1	IC,(HD10231)			
Q 2	IC,(MC10176L)			
Q 3	IC,(HD10231)			
Q 4	IC,(HD10231)			
Q 5	IC,(HD10231)			
Q 6	IC,(HD100151)			
Q 7	IC,(MC10H102L)			
Q 8	IC,(HD100102)			
Q 9	IC,(HD100114)			
Q 10	IC,(HD100151)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
Q11	IC,(HD100102)			
Q12	IC,(MC10H101L)			
Q13	IC,(MC10H102L)			
Q15	IC,(MC10H102L)			
Q15	IC,(HD10101)			
Q16	IC,(MC10H102L)			
Q17	IC,(MC10H101L)			
Q18	Not assigned			
Q19	IC,(MC10176L)			
Q20	IC,(HD10105)			
Q21	IC,(HD10109)			
Q22	IC,(MB10135)			
Q23	IC,(HD100102)			
Q24	IC,(MC10H107L)			
Q25	IC,(HD10102)			
Q26	IC,(HD10107)			
Q27	IC,(HD10101)			
Q28	IC,(HD10131)			
Q29	IC,(HD10102)			
Q30	IC,(HD10101)			
Q31	IC,(HD10101)			
Q32	IC,(MC10176L)			
Q33	IC,(MC10176L)			
Q34	IC,(MC10176L)			
Q35	IC,(MC10176L)			
Q36	IC,(HD10110)			
Q37	IC,(μPC16305H)			
Q38	Tr,(2SD571)			
Q39	IC,(μPC251C)			
Q40	Di,breakdown, (RD5.1E(3))	4.95 to 5.2V,400mW		
Q41	Tr,(2SC2570A)			
Q42	Not assigned			
Q43	Tr,(2SC2570A)			
Q44	Tr,(2SC2570A)			
Q45	Not assigned			
Q46	Tr,(2SC2570A)			
Q47	Di,breakdown, (RD5.1EB(3))	5.09 to 5.37V,400mW		
Q48	Tr,(2SC1826S)			
Q49	IC,(μPC251C)			
Q50	Tr,(2SD571)			
Q51	Tr,(2SA1154)			
Q52	Not assigned			
Q53	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
Q54	Not assigned			
Q55	Not assigned			
Q56	IC,(μPC251C)			
Q57	Di,breakdown, (RD5.1EB(3))	5.09 to 5.37V,400mW		
Q58	Tr,(2SC2570A)			
Q59	Not assigned			
Q60	Tr,(2SC2570A)			
Q61	Tr,(2SC2570A)			
Q62	Not assigned			
Q63	Tr,(2SC2570A)			
Q64	Di,breakdown,(RD5.1EB)	4.8 to 5.4V,400mW		
Q65	Tr,(2SD571)			
Q66	IC,(TC4052BP)			
Q67	IC,(μPC251C)			
Q68	IC,(μPC251C)			
Q69	IC,(μPC251C)			
Q70	Tr,(2SD571)			
Q71	Tr,(2SD571)			
Q72	IC,(μPC251C)			
Q73	Di,breakdown,(RD5.1EB)	4.8 to 5.4V,400mW		
Q74	Tr,(2SC2570A)			
Q75	Not assigned			
Q76	Tr,(2SC2570A)			
Q77	Tr,(2SC2570A)			
Q78	Not assigned			
Q79	Tr,(2SC2570A)			
Q80	Di,breakdown,(RD5.1EB)	4.8 to 5.4V,400mW		
Q81	Tr,(2SD571)			
Q82	Tr,(2SD571)			
Q83	IC,(μPC251C)			
Q84	Di,breakdown,(RD5.1EB)	4.8 to 5.4V,400mW		
Q85	Tr,(2SC2570A)			
Q86	Not assigned			
Q87	Tr,(2SC2570A)			
Q88	Tr,(2SC2570A)			
Q89	Not assigned			
Q90	Tr,(2SC2570A)			
Q91	Di,breakdown,(RD5.1EB)	4.8 to 5.4V,400mW		
Q92	Tr,(2SD571)			
Q93	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
Q94	IC,(μPC251C)			
Q95	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q96	Tr,(2SA1161)			
Q97	Tr,(2SA1161)			
Q98	Tr,(2SA1161)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
Q99	Tr,(2SA1161)			
Q100	Tr,(2SA1161)			
Q101	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q102	Not assigned			
Q103	Not assigned			
Q104	Not assigned			
Q105	Not assigned			
Q106	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q107	Tr,(2SA1161)			
Q108	Tr,(2SB605)			
Q109	IC,(μPC251C)			
Q110	Tr,(2SC1907)			
Q111	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q112	Tr,(2SC2570A)			
Q113	Tr,(2SC2570A)			
Q114	Tr,(2SC1907)			
Q115	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q116	Tr,(2SD571)			
Q117	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q118	Tr,(2SA1161)			
Q119	Tr,(2SA1161)			
Q120	Tr,(2SA1161)			
Q121	Tr,(2SA1161)			
Q122	Tr,(2SA1161)			
Q123	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q124	Tr,(2SA1161)			
Q125	Tr,(2SB605)			
Q126	IC,(μPC251C)			
Q127	Tr,(2SC1907)			
Q128	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q129	Tr,(2SC2570A)			
Q130	Tr,(2SC2570A)			
Q131	Not assigned			
Q132	Not assigned			
Q133	Not assigned			
Q134	Not assigned			
Q135	Not assigned			
Q136	Tr,(2SC1907)			
Q137	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q138	Tr,(2SD571)			
Q139	IC,(TC4053BP)			
Q140	IC,(μPC251C)			
Q141	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q142	Tr,(2SA1161)			
Q143	Tr,(2SA1161)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
Q144	Tr,(2SA1161)			
Q145	Tr,(2SA1161)			
Q146	Tr,(2SA1161)			
Q147	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q148	Tr,(2SA1161)			
Q149	Tr,(2SB605)			
Q150	IC,(μPC251C)			
Q151	Tr,(2SC1907)			
Q152	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q153	Tr,(2SC2570A)			
Q154	Tr,(2SC2570A)			
Q155	Tr,(2SC1907)			
Q156	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q157	Tr,(2SD571)			
Q158	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q159	Tr,(2SA1161)			
Q160	Tr,(2SA1161)			
Q161	Tr,(2SA1161)			
Q162	Tr,(2SA1161)			
Q163	Tr,(2SA1161)			
Q164	Di,breakdown,(RD4.3EB)	4.0 to 4.5V,400mW		
Q165	Tr,(2SA1161)			
Q166	Tr,(2SB605)			
Q167	IC,(μPC251C)			
Q168	Tr,(2SC1907)			
Q169	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q170	Tr,(2SC2570A)			
Q171	Not assigned			
Q172	Not assigned			
Q173	Not assigned			
Q174	Not assigned			
Q175	Not assigned			
Q176	Tr,(2SC2570A)			
Q177	Tr,(2SC1907)			
Q178	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q179	Tr,(2SD571)			
Q180	IC,(SN74ALS574N)			
Q181	IC,(SN74ALS574N)			
Q182	IC,(74LS32)			
Q183	IC,(74LS00)			
Q184	IC,(TC4052BP)			
Q185	IC,(μPC251C)			
Q186	IC,(μPC251C)			
Q187	IC,(μPC251C)			
Q188	IC,(μPC251C)			

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
Q189	Tr,(2SD571)			
Q190	Tr,(2SC1826S)			
Q191	IC,(μPC251C)			
Q192	Di,breakdown, (RD5.1E(3))	4.95 to 5.2V,400mW		
Q193	Tr,(2SC2570A)			
Q194	Not assigned			
Q195	Tr,(2SC2570A)			
Q196	Tr,(2SC2570A)			
Q197	Not assigned			
Q198	Tr,(2SC2570A)			
Q199	Di,breakdown, (RD5.1E(3))	4.95 to 5.2V,400mW		
Q200	Tr,(2SD571)			
Q201	Not assigned			
Q202	IC,(TC4053BP)			
Q203	Tr,(2SA1154)			
Q204	Not assigned			
Q205	Not assigned			
Q206	Tr,(2SD571)			
Q207	IC,(μPC251C)			
Q208	Di,breakdown, (RD5.1E(3))	4.95 to 5.2V,400mW		
Q209	Tr,(2SC2570A)			
Q210	Not assigned			
Q211	Tr,(2SC2570A)			
Q212	Tr,(2SC2570A)			
Q213	Not assigned			
Q214	Tr,(2SC2570A)			
Q215	Di,breakdown, (TD5.1E(3))	4.95 to 5.2V,400mW		
Q216	Tr,(2SD571)			
Q217	Not assigned			
Q218	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q219	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q220	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q221	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q222	Not assigned			
Q223	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q224	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q225	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q226	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q227	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q228	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
Q229	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q230	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q231	Di,breakdown,(RD6.2EB)	5.8 to 6.2V,400mW		
Q232	IC,(MC10H116L)			
R 1	CF,(ARD25T820J)	82 ,±5%,1/4W		
R 2	CF,(ARD25T131J)	130 ,±5%,1/4W		
R 3	CF,(ARD25T820J)	82 ,±5%,1/4W		
R 4	CF,(ARD25T131J)	130 ,±5%,1/4W		
R 5	Not assigned			
R 6	Not assigned			
R 7	Single in-line array, (IHR-6-681JA)	680 x 6,1/8W		
R 8	Not assigned			
R 9	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R 10	Not assigned			
R 11	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R 12	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 13	CF,(ARD25T221J)	220 ,±5%,1/4W		
R 14	Not assigned			
R 15	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R 16	CF,(ARD25T220J)	22 ,±5%,1/4W		
R 17	MF,(RS2FB10.J)	10.,±5%,2W		
R 18	MF,(RN14K2E2940D)	294Ω,±0.5%,1/4W		
R 19	MF,(RN14K2E8060D)	806 ,±0.5%,1/4W		
R 20	CF,(ARD25T4R7J)	4.7 ,±5%,1/4W		
R 21	CF,(ARD25T391J)	390 ,±5%,1/4W		
R 22	CF,(ARD25T391J)	390 ,±5%,1/4W		
R 23	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R 24	CF,(ARD25T681J)	680 ,±5%,1/4W		
R 25	CF,(ARD25T820J)	82 ,±5%,1/4W		
R 26	CF,(ARD25T131J)	130 ,±5%,1/4W		
R 27	CF,(ARD25T681J)	680 ,±5%,1/4W		
R 28	Single in-line array, (IHR-4-391JA)	390 x 6,1/8W		
R 29	CF,(ARD25T391J)	390 ,±5%,1/4W		
R 30	CF,(ARD25T820J)	82 ,±5%,1/4W		
R 31	Single in-line array, (IHR-4-391JA)	390 x 4,1/8W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R32	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R33	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R34	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R35	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R36	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R39	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R40	Not assigned			
R41	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R42	Not assigned			
R43	Not assigned			
R44	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R45	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R46	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R47	Not assigned			
R48	Not assigned			
R49	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R50	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R51	Single in-line array, (IHR-4-471JA)	470Ω x 4,1/8W		
R52	CF,(ARD25T4R7J)	4.7Ω,±5%,1/4W		
R53	Not assigned			
R54	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R55	Single in-line array, (IHR-4-471JA)	470Ω x 4,1/8W		
R56	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R57	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R58	CF,(ARD25T*J)	1.0 to 10Ω,±5%,1/4W		Q'ty 0 to 2
R59	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R60	Not assigned			
R61	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R62	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R63	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R64	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R65	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R66	CF,(ARD25T111J)	110 ,±5%,1/4W		
R67	CF,(ARD25T181J)	180 ,±5%,1/4W		
R68	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R69	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R70	CF,(ARD25T111J)	110 ,±5%,1/4W		
R71	CF,(ARD25T111J)	110 ,±5%,1/4W		
R72	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R73	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R74	CF,(ARD25T181J)	180Ω,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : T-25, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R75	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R76	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R77	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R78	CF,(ARD25T6R8J)	6.8Ω,±5%,1/4W		
R79	Not assigned			
R80	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R81	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R82	Not assigned			
R83	Not assigned			
R84	Not assigned			
R85	Not assigned			
R86	Not assigned			
R87	Not assigned			
R88	Not assigned			
R89	Not assigned			
R90	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R91	Not assigned			
R92	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R93	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R94	Not assigned			
R95	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R96	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R97	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R98	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R99	Not assigned			
R100	Not assigned			
R101	Not assigned			
R102	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R103	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R104	Single in-line array, (IHR-6-681JA)	680Ω x 6,1/8W		
R105	Not assigned			
R106	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R107	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R108	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R109	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R110	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R111	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R112	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R113	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R114	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R115	Single in-line array, (IHR-6-681JA)	680Ω x 6,1/8W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-25, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R116	Not assigned			
R117	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R118	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R119	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R120	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R121	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R122	MF,(RN14K2E3920D)	392Ω,±0.5%,1/4W		
R123	Var,MF,(RJ-6P 1k)	1kΩ,1/2W		
R124	MF,(RN14K2E2001D)	2.00kΩ,±0.5%,1/4W		
R125	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R126	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R127	MF,(RN14K2E1591D)	1.59kΩ,±0.5%,1/4W		
R128	MF,(RN14K2E1591D)	1.59kΩ,±0.5%,1/4W		
R129	MF,(RN14K2E1591D)	1.59kΩ,±0.5%,1/4W		
R130	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R131	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R132	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R133	MF,(RN14K2E3920D)	392Ω,±0.5%,1/4W		
R134	MF,(RN14K2E3920D)	392Ω,±0.5%,1/4W		
R135	MF,(RN14K2E3920D)	392Ω,±0.5%,1/4W		
R136	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R137	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R138	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R139	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R140	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R141	Not assigned			
R142	Not assigned			
R143	Not assigned			
R144	Not assigned			
R145	Single in-line array, (IHR-4-102JA)	1kΩ x 4,1/8W		
R146	Not assigned			
R147	Single in-line array, (IHR-4-102JA)	1kΩ x 4,1/8W		
R148	Single in-line array, (IHR-6-681JA)	680Ω x 6,1/8W		
R149	Not assigned			
R150	Single in-line array, (IHR-4-102JA)	1kΩ x 4,1/8W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-25, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R151	Not assigned			
R152	Not assigned			
R153	Single in-line array, (IHR-6-102JA)	1kΩ x 6,1/8W		
R154	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R155	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R156	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R157 to R172	Not assigned			
R173	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R174	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R175	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R176	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R177	Not assigned			
R178	Not assigned			
R179	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R180	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R181	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R182	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R183	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R184	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R185	Not assigned			
R186	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R187	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R188	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R189	Not assigned			
R190	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R191	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R192	Not assigned			
R193	Not assigned			
R194	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R195	MF,(RS2FB22R0J)	22Ω,±5%,2W		
R196	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R197	MF,(RS2FB22R0J)	22Ω,±5%,1/4W		
R198	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R199	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R200	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R201	Not assigned			
R202	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R203	Not assigned			
R204	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R205	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R206	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R207	MF,(NRTF1C100RJ)	100Ω,±5%,1W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-25, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R208	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R209	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R210	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R211	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R212	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R213	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R214	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R215	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R216	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R217	Not assigned			
R218	Not assigned			
R219	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R220	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R221	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R222	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R223	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R224	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R225	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R226	Not assigned			
R227	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R228	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R229	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R230	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R231	MF,(NRTF1C100RJ)	100Ω,±5%,1W		
R232	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R233	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R234	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R235	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R236	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R237	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R238	Not assigned			
R239	CF,(ARD25T474J)	470kΩ,±5%,1/4W		
R240	CF,(ARD25T474J)	470kΩ,±5%,1/4W		
R241	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R242	Not assigned			
R243	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R244	Not assigned			
R245	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R246	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R247	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R248	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R249	MF,(RN14K2E1502D)	15.0kΩ,±0.5%,1/4W		
R250	MF,(RN14K2E1912D)	19.1kΩ,±0.5%,1/4W		
R251	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R252	MF,(RN14K2E8251D)	8.25kΩ,±0.5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R251	MF,(RN14K2E3162D)	31.6k ,±0.5%,1/4W		
R254	MF,(RN14K2E1152D)	11.5k ,±0.5%,1/4W		
R255	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R256	MF,(RN14K2E4991D)	4.99k ,±0.5%,1/4W		
R257	MF,(RN14K2E1002D)	10.0k ,±0.5%,1/4W		
R258	MF,(RN14K2E1002D)	10.0k ,±0.5%,1/4W		
R259	CF,(ARD25T680J)	68 ,±5%,1/4W		
R260	CF,(ARD25T100J)	10 ,±5%,1/4W		
R261	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R262	CF,(ARD25T101J)	100 ,±5%,1/4W		
R263	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R264	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R265	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R266	CF,(ARD25T750J)	75 ,±5%,1/4W		
R267	Not assigned			
R268	Not assigned			
R269	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R270	Not assigned			
R271	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R272	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R273	Not assigned			
R274	CF,(ARD25T560J)	56Ω,±5%,1/4W		
P275	Not assigned			
R276	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R277	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R278	Not assigned			
R279	Not assigned			
R280	Var,MF(RJ-4W 100Ω)	100Ω,1/2W		
R281	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R282	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R283	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R284	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R285	MF,(NRTF1C100ΩJ)	100Ω,±5%,1W		
R286	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R287	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R288	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R289	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R290	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R291	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R292	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R293	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R294	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R295	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R296	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R297	CF,(ARD25T820J)	82Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R298	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R299	Not assigned			
R300	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R301	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R302	Not assigned			
R303	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R304	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R305	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R306	Not assigned			
R307	Not assigned			
R308	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R309	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R310	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R311	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R312	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R313	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R314	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R315	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R316	MF,(NRTF1C100ΩJ)	100Ω,±5%,1W		
R317	CF,(ARD25T821J)	820Ω,±5%,1/4W		
R318	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R319	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R320	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R321	Not assigned			
R322	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R323	Not assigned			
R324	MF,(RN14K2E7501D)	7.50kΩ,±0.5%,1/4W		
R325	MF,(RN14K2E3241D)	3.24kΩ,±0.5%,1/4W		
R326	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R327	MF,(RN14K2E1072D)	10.7kΩ,±0.5%,1/4W		
R328	Not assigned			
R329	MF,(RN14K2E2001D)	2.00kΩ,±0.5%,1/4W		
R330	MF,(RN14K2E1302D)	13.0kΩ,±0.5%,1/4W		
R331	MF,(RN14K2E4991D)	4.99kΩ,±0.5%,1/4W		
R332	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R333	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R334	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R335	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R336	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R337	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R338	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R339	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R340	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R341	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R342	MF,(RN14K2H151J)	150Ω,±5%,1/2W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R343	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R344	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R345	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R346	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R347	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R348	Not assigned			
R349	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R350	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R351	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R352	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R353	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R354	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R355	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R356	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R357	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R358	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R359	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R360	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R361	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R362	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R363	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R364	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R365	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R366	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R367	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		O'ty 2 Parallel
R368	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R369	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R370	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R371	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R372	CF,(ARD25T152J)	1.5k ,±5%,1/4W		
R373	CF,(ARD25T151J)	150 ,±5%,1/4W		
R374	CF,(ARD25T151J)	150 ,±5%,1/4W		
R375	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R376	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R377	MF,(RN14K2H151J)	150 ,±5%,1/2W		
R378	MF,(RN14K2H151J)	150 ,±5%,1/2W		
R379	CF,(ARD25T151J)	150 ,±5%,1/4W		
R380	CF,(ARD25T151J)	150 ,±5%,1/4W		
R381	CF,(ARD25T152J)	1.5k ,±5%,1/4W		
R382	CF,(ARD25T221J)	220 ,±5%,1/4W		
R383	CF,(ARD25T820J)	82 ,±5%,1/4W		
R384	MF,(RN14K2E16R9D)	16.9 ,±0.5%,1/4W		
R385	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R386	MF,(RN14K2E1002D)	10.0k ,±0.5%,1/4W		
R387	MF,(RN14K2E1002D)	10.0k ,±0.5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R388	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R389	CF,(ARD25T221J)	220 ,±5%,1/4W		
R390	CF,(ARD25T820J)	82 ,±5%,1/4W		
R391	CF,(ARD25T152J)	1.5k ,±5%,1/4W		
R392	CF,(ARD25T181J)	180 ,±5%,1/4W		
R393	CF,(ARD25T181J)	180 ,±5%,1/4W		
R394	Var,MF,(RJ-4W 100)	100 ,1/2W		
R395	Var,MF,(RJ-4W 100)	100 ,1/2W		
R396	CF,(ARD25T101J)	100 ,±5%,1/4W		
R397	CF,(ARD25T470J)	47 ,±5%,1/4W		
R398	CF,(ARD25T470J)	47 ,±5%,1/4W		
R399	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R400	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R401	CF,(ARD25T152J)	1.5k ,±5%,1/4W		
R402	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R403	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R404	MF,(RN14K2H151J)	150Ω,±5%,1/2W		O'ty 2 Parallel
R405	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R406	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R407	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R408	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R409	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R410	MF,(RN14K2E8251D)	8.25kΩ,±0.5%,1/4W		
R411	MF,(RN14K2E3011D)	3.01kΩ,±0.5%,1/4W		
R412	MF,(RN14K2E2211D)	2.21kΩ,±0.5%,1/4W		
R413	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R414	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R415	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R416	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R417	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R418	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R419	CF,(ARD25T151J)	150 ,±5%,1/4W		
R420	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R421	CF,(ARD25T221J)	220 ,±5%,1/4W		
R422	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R423	MF,(RN14K2E16R9D)	16.9 ,±0.5%,1/4W		
R424	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R425	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R426	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R427	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R428	CF,(ARD25T221J)	220 ,±5%,1/4W		
R429	CF,(ARD25T820J)	82 ,±5%,1/4W		
R430	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R431	CF,(ARD25T151J)	180Ω,±5%,1/4W		
R432	Var,MF,(RJ-4W 100)	100 ,1/2W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R433	Not assigned			
R434	Not assigned			
R435	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R436	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R437	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R438	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R439	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R440	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R441	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R442	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R443	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R444	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R445	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		Qty 2 Parallel
R446	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R447	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R448	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R449	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R450	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R451	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R452	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R453	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R454	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R455	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R456	MF,(RN14K2H151J)	150Ω,±5%,1/2W		
R457	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R458	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R459	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R460	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R461	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R462	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R463	Not assigned			
R464	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R465	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R466	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R467	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R468	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R469	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R470	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R471	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R472	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R473	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R474	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R475	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R476	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R477	CF,(ARD25T470J)	47Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R478	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R479	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R480	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R481	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R482	*CF,(ARD25T101J)	100Ω,±5%,1/4W		
R483	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R484	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R485	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R486	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R487	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R488	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R489	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R490	MF,(RN14K2H151J)	150Ω,±5%,1/2W		Qty 2 Parallel
R491	Single in-line array, (IHR-6-102JA)	1kΩ x 6,1/8W		
R492	Single in-line array, (IHR-4-102JA)	1kΩ x 4,1/8W		
R493	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R494	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R495	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R496	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R497	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R498	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R499	MF,(RN14K2E1502D)	15.0kΩ,±0.5%,1/4W		
R500	MF,(RN14K2E1912D)	19.1kΩ,±0.5%,1/4W		
R501	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R502	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R503	Not assigned			
R504	Not assigned			
R505	Not assigned			
R506	MF,(RN14K2E4991D)	4.99kΩ,±0.5%,1/4W		
R507	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R508	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R509	MF,(RN14K2E6041D)	6.04kΩ,±0.5%,1/4W		
R510	MF,(RN14K2E3162D)	31.6kΩ,±0.5%,1/4W		
R511	MF,(RN14K2E1152D)	11.5kΩ,±0.5%,1/4W		
R512	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R513	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R514	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R515	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R516	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R517	MF,(RS1FB220J)	22Ω,±5%,1W		
R518	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R519	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R520	CF,(ARD25T680J)	68Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R521	Not assigned			
R522	Not assigned			
R523	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R524	Not assigned			
R525	Not assigned			
R526	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R527	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R528	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R529	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R530	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R531	Not assigned			
R532	Not assigned			
R533	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R534	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R535	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R536	MF,(NRTF1C100GJ)	100Ω,±5%,1W		
R537	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R538	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R539	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R540	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R541	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R542	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R543	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R544	Not assigned			
R545	Not assigned			
R546	Not assigned			
R547	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R548	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R549	Not assigned			
R550	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R551	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R552	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R553	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R554	Not assigned			
R555	Not assigned			
R556	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R557	Not assigned			
R558	Not assigned			
R559	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R560	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R561	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R562	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R563	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R564	Not assigned			
R565	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z5, OUTPUT AMP

CKT REF	DESCRIPTION	RATING		NOTE
R566	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R567	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R568	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R569	MF,(NRTF1C100GJ)	100Ω,±5%,1W		
R570	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R571	Not assigned			
R572	Not assigned			
R573	Not assigned			
R574	Var,MF,(RJ-4W 100Ω)	100Ω,1/2W		
R575	MF,(RN14K2E16R9D)	16.9Ω,±0.5%,1/4W		
R576	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R577	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R578	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R579	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R580	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R581	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R582	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R583	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R584	Not assigned			
R585	Not assigned			
R586	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R587	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R588	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R589	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R590	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R591	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R592	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R593	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R594	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R595	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R596	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R597	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R598	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R599	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R600	MF,(RN14K2E1001D)	1.00kΩ,±0.5%,1/4W		
R601	Var,MF,(RJ-4W 1k Ω)	1kΩ,1/2W		
R602	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R603	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R604	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R605	CF,(ARD25T820J)	82Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-28, CMI SHAPER

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924F1H104Z)	0.1μF,+80,-20%,50V		
C 2	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 3	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		*
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 7	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 9	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C10	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Receptacle, (27DP-LR-PC)			
Q 1	IC,(HD100114)			
Q 2	IC,(HD100107)			
Q 3	IC,(HD100131)			
Q 4	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
R 1	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R 2	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 3	MF,(RN14K2E1820D)	182Ω,±0.5%,1/4W		
R 4	Var,MF,(RJ-6P 100Ω)	100Ω,1/2W		
R 5	MF,(RN14K2E7320D)	732Ω,±0.5%,1/4W		
R 6	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R 7	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R 8	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R 9	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R10	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R11	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R12	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R13	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R14	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R15	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R16	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R17	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R18	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R19	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R20	MF,(RN14K2E4220D)	422Ω,±0.5%,1/4W		
R21	CF,(ARD25T131J)	130Ω,±5%,1/4W		
Z 1	DELAY LINE,(DFS-020S)	20cm		
Z 2	DELAY LINE,(DFS-020S)	7.5cm		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-26, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E471)	470μF,±20%,25V		
C 2	Elect,(CE02W1E471)	470μF,±20%,25V		
C 3	Elect,(CE02S1A102)	1000μF,±20%,10V		
C 4	Cer,(CK924F1H1042)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H1042)	0.1μF,+80/-20%,50V		
J 1	Cable, (HIF23A-34D-AA20S)			
Q 1	IC,(M54563P)			
Q 2	IC,(74F537)			
Q 3	IC,(74F537)			
Q 4	IC,(74145)			
Q 5	Not assigned			
Q 6 to Q18	LED,(TLG226)			
Q19	Not assigned			
Q20	LED,(TLG226)			
Q21	LED,(TLG226)			
Q22	LED,(TLG226)			
Q23	LED,(TLG226)			
Q24	LED,(TLG226)			
Q25	LED,(TLG226)			
Q26	LED,(TLG226)			
Q27	Not assigned			
Q28	LED,(LN513GKM)			
Q29	LED,(LN513GKM)			
Q30	LED,(TLG226)			
Q31	LED,(LN513GKM)			
Q32	LED,(TLG226)			
Q33 to Q84	LED,(LN342GPH)			
Q65 to Q86	LED,(TLG226)			
Q87	LED,(LN514GK)			
Q88	LED,(LN514GK)			
Q89	LED,(LN514GK)			
Q90	LED,(LN514GK)			
Q91	IC,(M54523P)			
Q92	IC,(M54523P)			
Q93	IC,(M54523P)			

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( ): Manufacturer's part number
* : Selected at factory

Parts List : T-26, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
R 1	Var,MF,(RG161P10SB1kΩM)	1kΩ,±20%,1/2W		
R 2	Var,MF,(RG161P10SB1kΩM)	1kΩ,±20%,1/2W		
R 3	Var,MF,(RG161P10SB1kΩM)	1kΩ,±20%,1/2W		
R 4	Var,MF,(RG161P10SB1kΩM)	1kΩ,±20%,1/2W		
R 5	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 6	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 7	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 8	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 9	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R10	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R11	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R12	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R13	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R14	CF,(ARD25T151J)	150Ω,±5%,1/4W		
P15	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R16	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R17	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R18	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R19	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R20	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R21	CF,(ARD25T131J)	130Ω,±5%,1/4W		
S 1	Key switch,(KEG10901)			
S 2	Key switch,(KEG10901)			
S 3	Key switch,(HL20-NS)			
S 4	Key switch,(HL20-NS)			
S 5	Key switch,(HL20-NS)			
S 6	Key switch,(HL20-NS)			
S 7	Key switch,(HL20-NS)			
S 8	Key switch,(KEG10901)			
S 9	Key switch,(KEG10901)			
S10	Key switch,(KEG10901)			
S11	Key switch,(KEG10901)			
S12	Key switch,(KEG10901)			
S13	Key switch,(KEG10901)			
S14	Key switch,(HL20-NS)			
S15	Key switch,(HL20-NS)			
S16	Key switch,(HL20-NS)			
S17	Key switch,(HL20-NS)			
S18	Key switch,(KEG10901)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-26, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
S19	Key switch,(HL20-NS)			
S20	Key switch,(HL20-NS)			
S21	Key switch,(HL20-NS)			
S22	Key switch,(HL20-NS)			
S23	Key switch,(HL20-NS)			
S24	Key switch,(KEG10901)			
S25	Key switch,(KEG10901)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z7, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04C1J4R7)	4.7_F,±20%,63V		
C 2	Elect,(KM200VNSN39030C)	390_F,±20%,200V		
C 3	M Plast,(1MFT-P225J)	2.2_F,±5%,100V		
C 4	Elect,(KM200VNSN39030C)	390_F,±20%,200V		
C 5	Elect,(CE04C1J100)	10_F,±20%,63V		
C 6	Cer,(CK924F1H104Z)	0.1_F,+80%-20%,50V		
C 7	Not assigned			
C 8	Elect,(CE04C1E221)	220_F,±20%,25V		
C 9	Elect,(CE04C1J100)	10_F,±20%,63V		
C10	Cer,(CK924F1H104Z)	0.1_F,+80%-20%,50V		
C11	Elect,(CE04C1A470)	47_F,±20%,10V		
C12	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C13	Not assigned			
C14	Not assigned			
C15	Elect,(CE04W1J1R0)	1_F,±20%,63V		
C16	Not assigned			
C17	Plast,(ECQ-E2A474MW)	0.47_F,±20%,250V		
C18	Cer,(DE7120F332MVA1)	3300pF,±20%,400V		
C19	Not assigned			
C20	Elect,(KM10VNSN470022A)	4700_F,±20%,10V		
C21	Elect,(CE04C1A471)	470_F,±20%,10V		
C22	Elect,(KM10VNSN680022B)	6800_F,±20%,10V		
C23	Elect,(CE04C1A471)	470_F,±20%,10V		
C24	Elect,(CE04C1E221)	220_F,±20%,25V		
C25	Not assigned			
C26	Elect,(CE04C1E221)	220_F,±20%,25V		
C27	Not assigned			
C28	Elect,(CE04C1E221)	220_F,±20%,25V		
C29	Not assigned			
C30	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C31	Elect,(CE04C1E220)	22_F,±20%,25V		
C32	Cer,(RPE111CH681G50)	680pF,±2%,50V		
C33	Cer,(RPE111CH681G50)	680pF,±2%,50V		
C34	Plast,(ECQ-V1H473JW)	0.047_F,±5%,50V		
C35	Plast,(ECQ-V1H473JW)	0.047_F,±5%,50V		
C36	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C37	Cer,(CK924C1H104M)	0.1_F,±20%,50V		
C38	Not assigned			
C39	M Plast, (CF922N2E104K)	0.1_F,±10%,250V		

( ): Manufacturer's part number
• : Selected at factory

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Parts List : T-Z7, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
F 1	Fuse,(MF51NN250V 3.15ADC01)	250V,3.15A		
F 2	Fuse,(MF51NN250V 8ADC01)	250V,8A		
F 3	Fuse,(MF51NN250V 8ADC01)	250V,8A		
F 4	Fuse,(MF51NN250V 0.8ADC01)	250V,0.8A		
F 5	Not assigned			
F 6	Temperature fuse, (SF109U)	125V-5A-15A		
F 7	Fuse,(MF51NN250V 2ADC01)	250V,2A		
J 1	Not assigned			
J 2	Plug,(1490P)	4P		
J 3	Jack,(DF1-8S-2.5R24)			
J 4	Plug,(DF1-8P-2.5DS)	8P		
L 1	Coil,(SN-10-500)	110uH,3A		
L 2	Coil,(SN-10-500)	110uH,3A		
L 3	Coil,(LH3-222K)	2200uH		
L 4	Coil,(SKL-202)	50uH,10A		
L 5	Coil,(SC-10-015)	145uH,10A		
L 6	Coil,(SKL-301)	30uH,15A		
L 7	Coil,(SC-15-018)	180uH,15A		
L 8	Coil,(SKU-054-B9)	1.3mH,2A		
L 9	Coil,(SKU-054-B9)	1.3mH,2A		
L10	Coil,(LH5-102K)	1000uH		
Q 1	Rectifier,(V19E)			
Q 2	Di,breakdown,(RD100EB)	94 to 106V,400mW		
Q 3	Di,breakdown,(RD100EB)	94 to 106V,400mW		
Q 4	IC,(AC16EGML)			
Q 5	IC,(AC08EGML)			
Q 6	Di,(1S955)			
Q 7	Rectifier,(S5VB60)			
Q 8	Tr,(2SD798)			
Q 9	Rectifier,(V19E)			
Q10	Di,breakdown,(RD11EB)	10.4 to 11.6V,400mW		
Q11	Di,breakdown,(RD2.7EB)	2.5 to 2.9V,400mW		
Q12	IC,(μPC277C)			
Q13	Tr,(2SA836)			

( ): Manufacturer's part number
• : Selected at factory

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Parts List : T-Z7, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
Q14	Not assigned			
Q15	Di,(1S955)			
Q16	Di,(1S955)			
Q17	Rectifier,(V19E)			
Q18	Rectifier,(V19E)			
Q19	Rectifier,(V19E)			
Q20	Rectifier,(V19E)			
Q21	Tr,(2SC3164)			
Q22	Rectifier,(V19E)			
Q23	Rectifier,(V19E)			
Q24	Rectifier,(V19E)			
Q25	Rectifier,(V19E)			
Q26	Tr,(2SC3164)			
Q27	Not assigned			
Q28	Not assigned			
Q29	Rectifier,(U19C)			
Q30	Rectifier,(U19C)			
Q31	Rectifier,(U19C)			
Q32	Not assigned			
Q33	Tr,(2SA1154)			
Q34	IC,(μPC494C)			
Q35	IC,(PC-618)			
Q36	Tr,(2SC2718)			
Q37	IC,(μPC803C)			
Q38	Di,breakdown,(RD11EB)	10.4 to 11.6V,400mW		
Q39	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q40	Rectifier,(S25SC6M)			
Q41	Rectifier,(S25SC6M)			
Q42	Rectifier,(S25SC6M)			
Q43	Rectifier,(S5KC20H)			
Q44	Rectifier,(S5KC20HR)			
Q45	Not assigned			
Q46	Tr,(2SC2721)			
Q47	Tr,(2SC2721)			
Q48	Not assigned			
Q49	Not assigned			
Q50	Rectifier,(U19C)			
Q51	Rectifier,(U19C)			
Q52	IC,(HCPL-3700)			
R 1	WW,(ERF-5SK100)	10_,±5%,5W		
R 2	MF,(RN14K2H102J)	1k_,±5%,1/2W		
R 3	CF,(ARD25T150J)	15_,±5%,1/4W		
R 4	MF,(RS1FB100kJ)	100k_,±5%,1W		Qty:2 Parallel
R 5	MF,(RN14K2H104J)	100k_,±5%,1/2W		

( ): Manufacturer's part number
• : Selected at factory

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Parts List : T-Z7, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
R 6	MF,(ERQ-2CJ102)	1kΩ,±5%,2W		
R 7	CF,(ARD25T333J)	33k_,±5%,1/4W		
R 8	MF,(RS1FB33kJ)	33k_,±5%,1W		
R 9	Not assigned			
R10	MF,(RS1FB10 J)	10_,±5%,1W		
R11	CF,(ARD25T470J)	47_,±5%,1/4W		
R12	CF,(ARD25T101J)	100_,±5%,1/4W		
R13	MF,(RS1FB10 J)	10_,±5%,1W		
R14	CF,(ARD25T470J)	47_,±5%,1/4W		
R15	CF,(ARD25T101J)	100_,±5%,1/4W		
R16	Not assigned			
R17	MF,(RN14K2H104J)	100k_,±5%,1/2W		
R18	CF,(ARD25T222J)	2.2k_,±5%,1/4W		
R19	CF,(ARD25T102J)	1k_,±5%,1/4W		
R20	CF,(ARD25T471J)	470_,±5%,1/4W		
R21	CF,(ARD25T102J)	1k_,±5%,1/4W		
R22	CF,(ARD25T153J)	15k_,±5%,1/4W		
R23	CF,(ARD25T222J)	2.2k_,±5%,1/4W		
R24	MF,(RN14K2E1822D)	18.2k_,±0.5%,1/4W		
R25	CF,(ARD25T272J)	2.7k_,±5%,1/4W		
R26	CF,(ARD25T392J)	3.9k_,±5%,1/4W		
R27	Not assigned			
R28	CF,(ARD25T222J)	2.2k_,±5%,1/4W		
R29	Not assigned			
R30	CF,(ARD25T821J)	820_,±5%,1/4W		
R31	CF,(ARD25T102J)	1k_,±5%,1/4W		
R32	CF,(ARD25T183J)	18k_,±5%,1/4W		
R33	MF,(RN14K2H471J)	470_,±5%,1/4W		
R34	CF,(ARD25T102J)	1k_,±5%,1/4W		
R35	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R36	Var,MF,(RJ-6S 2k_)	2k_,1/2W		
R37	MF,(RN14K2E1002D)	10kΩ,±0.5%,1/4W		
R38	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R39	MF,(RN14K2E1002D)	10.0k_,±0.5%,1/4W		
R40	CF,(ARD25T4R7J)	4.7_,±5%,1/4W		
R41	CF,(ARD25T4R7J)	4.7_,±5%,1/4W		
R42	MF,(RS1FB10Ω)	10Ω,±5%,1W		
R43	MF,(RS1FB10Ω)	10Ω,±5%,1W		
R44	CF,(ARD25T4R7J)	4.7_,±5%,1/4W		
R45	Not assigned			
R46	Not assigned			
R47	Not assigned			
R48	Not assigned			
R49	CF,(ARD25T621J)	620_,±5%,1/4W		
R50	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

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Parts List : T-Z7, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
R51	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R52	Not assigned			
R53	WW,(ERF-2SKR20)	0.2Ω,±10%,2W		
R54	Not assigned			
R55	Not assigned			
R56	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R57	CF,(ARD25T153J)	15kΩ,±5%,1/4W		
R58	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R59	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R60	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R61	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R62	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R63	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R64	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R65	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R66	CF,(ARD25T471J)	470Ω,±5%,1/4W		
S 1	ESD-3994S			
T 1	Driver trans, (C4T020603)			
T 2	Driver trans, (C4T020603)			
T 3	Power trans, (44T46077)			

( ): Manufacturer's part number
• : Selected at factory

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Parts List : T-Z9, GP-IB

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 2	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Cable, (HIF23A-26D-AA30S)			
J 2	Jack, (57-20240-8D35)			
Q 1	IC,(μPD7210C)			
Q 2	IC,(SN75160BN)			
Q 3	IC,(SN75162BN)			
Q 4	IC,(74LS32)			
Q 5	IC,(SN74LS540N)			
R 1	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 2	Not assigned			
R 3	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
S 1	Dip switch,(DIP-A(6))			

M-1

( ): Manufacturer's part number
• : Selected at factory

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Parts List : T-Z10, MOTHERBOARD

CKT REF	DESCRIPTION	RATING		NOTE
J 1	Jack,(225J-22221-587)	44P		
J 2	Jack,(225J22221-587)	44P		
J 3	Jack,(225J-22221-587)	44P		
J 4	Not assigned			
J 5	Jack,(225J-22221-587)	44P		
J 6	Jack,(225J-22221-587)	44P		
J 7	Jack,(225J-21821-587)	36P		
J 8	Not assigned			
J 9	Plug,(DF1-8P-2.5DSA)	8P		
J10	Not assigned			
J11	Jack,(225J-21821-587)	36P		
J12	Jack,(225J-21821-587)	36P		
J13	Jack,(225J-21821-587)	36P		
J14	Not assigned			
J15	Jack,(225J-21821-587)	36P		
J16	Jack,(225J-21821-587)	36P		
J17	Plug,(DF1-3P-2.5DSA)	3P		
J18	Plug,(DF1-3P-2.5DSA)	3P		
J19	Plug,(DF1-2P-2.5DSA)	2P		
J20	Plug,(DF1-2P-2.5DSA)	2P		

( ): Manufacturer's part number
• : Selected at factory

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Parts List : ME520B RECEIVER

CKT REF	DESCRIPTION	RATING		NOTE
C 1	M Plast, (ECW-S25255JZ(7))	2.5μF,±5%,250V		
E 1	Terminal,(A-12)			
E 2	Terminal stand, (500/1231DS)			
E 3	Terminal stand, (500/1231DS)			
E 4	Terminal stand, (500/1231DS)			
E 5	Terminal with 10φ pinch			
E 6	Terminal with 10φ pinch			
F 1	Fuse,(T5A 250V)	5A,250V	90-138V	
	Fuse,(T3.15A 250V)	3.15A,250V	180-250V	
F 2	Fuse,(T5A 250V)	5A,250V	90-138V	
	Fuse,(T3.15A 250V)	3.15A,250V	180-250V	
G 1	Fan,(MMF-12B12DL)	DC12V		
G 2	Fan,(FBK-08A12LZ)	DC12V		
J 1	Inlet,(8843-2SPFL 4/364)			
J 2	Jack,(1490R)			
J 3	Not assigned			
J 4	Not assigned			
J 5	Not assigned			
J 6	Plug,(27CP-LPS-1.5W)			
J 7	Plug,(27CP-LPS-1.5W)			
J 8	Plug,(27CP-LPS-1.5W)			
J 9	Plug,(27CP-LPS-1.5W)			
J10	Plug,(MP2.5CLP)			
J11	Plug,(MP2.5CLP)			
J12	Plug,(27CP-LPS-1.5W)			
J13	Plug,(27CP-LPS-1.5W)			
J14	Not assigned			
J15	Not assigned			
J16	Jack,(DF1-3S-2.5R24)			

M-1

( ): Manufacturer's part number
• : Selected at factory

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Parts List : ME520B RECEIVER

CKT REF	DESCRIPTION	RATING		NOTE
J17	Jack,(DF1-3S-2.5R24)			
J18	Jack,(DF1-2S-2.5R28)			
J19	Jack,(DF1-2S-2.5R28)			
J20	Jack,(DF1-2S-2.5R24)			
J21	Not assigned			
J22	Not assigned			
J23	Jack,(DF1-5S-2.5R24)			
J24	Jack,(DF1-5S-2.5R24)			
J25	Jack,(DF1-2S-2.5R24)			
J26	Jack,(DF1-2S-2.5R24)			
J27	Receptacle,(27DP-BR)			
Q 1	Surge absorber, (ERZ-C14DK471)			
Q 2	IC,(μPC1431H)			
Q 3	IC,(μPC1631H)			
S 1	Switch,(SDU3PE)			
V 1	Neon lamp,(BNS-3C)			
Z 1	EXTENDER BOARD			
Z 2	Not assigned			
Z 3	Not assigned			
Z 4	INPUT CIRCUIT			
Z 5	CMI CIRCUIT			
Z 6	AMI/HDB3 CIRCUIT			
Z 7	REGENERATOR			
Z 8	WORD GENERATOR			
Z 9	PLL CIRCUIT			
Z10	JITTER CIRCUIT			
Z11	COUNTER CIRCUIT			
Z12	CPU CIRCUIT			
Z13	Not assigned			
Z14	DISPLAY CIRCUIT			
Z15	GP-IB INTERFACE			
Z16	POWER SUPPLY			
Z17	MOTHER BOARD			

( ): Manufacturer's part number
• : Selected at factory

Parts List : ME520B RECEIVER

CKT REF	DESCRIPTION	RATING		NOTE
Z18	PRINTER,(Option 01)			
Z19	NOISE FILTER, (MBW-1203-22)			
Z20	NOISE FILTER, (MBW-1203-22)			

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E101)	100μF,±20%,25V		
C 2	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 3	Elect,(CE04W1E101)	100μF,±20%,25V		
C 4	Elect,(CE04C1C330)	33μF,±20%,16V		
C 5	Elect,(CE04W1E101)	100μF,±20%,25V		
C 6	Elect,(CE04C1C330)	33μF,±20%,16V		
C 7	Elect,(CE04W1E101)	100μF,±20%,25V		
C 8	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C 9	Elect,(CE04C1J2R2)	2.2μF,±20%,63V		
C10	Cer,(RPE114F225Z50)	2.2μF,+80/-20%,50V		
C11	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C12	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C13	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C14	Not assigned			
C15	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C16	Cer,(CK924C1H222M)	2200pF,±20%,50V		
C17	Elect,(CE04C1J2R2)	2.2μF,±20%,63V		
C18	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C19	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C20	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C21	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C22	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C23	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C24	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C25	Cer,(CK924C1H222M)	2200pF,±20%,50V		
C26	Elect,(CE04C1J2R2)	2.2μF,±20%,63V		
C27	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C28	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C29	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C30	Cer,(RPE114F335Z50)	3.3μF,+80/-20%,50V		
C31	Cer,(RPE114F335Z50)	3.3μF,+80/-20%,50V		
C32	Not assigned			
C33	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C34	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C35	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C36	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C37	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C38	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C41	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C42	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C43	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C44	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C45	Cer,(CK924C1H104M)	0.1μF,±20%,50V		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C47	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C48	Cer,(CK924C1H * M)	1000p to 0.1μF,±20%, 50V		•
C49	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C50	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C51	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C52	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C53	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C54	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C55	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C56	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C57	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C58	Not assigned			
C59	Elect,(CE04W1A101)	100μF,±20%,10V		
C60	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62	Not assigned			
C63	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C64	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C65	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C66	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C67	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C68	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C69	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C70	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C71	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C72	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C73	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C74	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C75	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C76	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C77	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C78	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C79	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C80	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C81	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C82	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C83	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C84	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C85	Cer,(CK924C1H104M)	0.1 μF,±20%,50V		
C86	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C87	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C88	Cer,(CK924C1H104M))	0.1μF,±20%,50V		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4 INPUT

CKT REF	DESCRIPTION	RATING		NOTE
C89	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C90	Elect,(CE04W1V100)	10μF,±20%,35V		
C91	Elect,(CE04W1V100)	10μF,±20%,35V		
C92	Elect,(CE04W1V100)	10μF,±20%,35V		
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C94	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C95	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C96	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C97	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C98	Cer,(RPE114F3J5Z50)	3.3μF,+80/-20%,50V		
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C100	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Pattern			
J 2	Pattern			
J 3	Not assigned			
J 4	Not assigned			
J 5	Not assigned			
J 6	Receptacle,(27CP-R-PC)			
J 7	Not assigned			
J 8	Receptacle,(27CP-R-PC)			
J 9	Not assigned			
J 10	Receptacle,(MP2.5CR)			
J 11	Not assigned			
J 12	Receptacle,(27CP-R-PC)			
K 1	Reed relay,(PG1C-05D)			
K 2	Reed relay,(PG1C-05D)			
K 3	Reed relay,(PG1C-05D)			
K 4	Reed relay,(PG1C-05D)			
K 5	Reed relay,(PG1C-05D)			
K 6	Reed relay,(PG1C-05D)			
K 7	Reed relay,(PG1C-05D)			
L 1	Coil,(LF8-101K)	100μH		
L 2	Coil,(LF8-101K)	100μH		
Q 1	Tr,(2SC1907)			
Q 2	Tr,(2SC1907)			
Q 3	Tr,(2SC1907)			
Q 4	Tr,(2SC2570A)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
Q 5	Di,breakdown, (RD3.0EB1)	2.840 to 3.080V, 400mW		
Q 6	Di,breakdown, (RD3.0EB1)	2.840 to 3.080V, 400mW		
Q 7	Di,(1SS97)			
Q 8	Di,(1SS97)			
Q 9	Tr,(2SC2570A)			
Q10	Tr,(2SC2570A)			
Q11	Tr,(2SC2570A)			
Q12	Di,breakdown, (RD3.6EB1)	3.455 to 3.695V, 400mW		
Q13	Di,breakdown, (RD3.6EB1)	3.455 to 3.695V, 400mW		
Q14	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q15	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q16	Di,breakdown, (RD3.9EB1)	3.74 to 4.01V,400mW		
Q17	Di,(1SS99)			
Q18	Di,(1SS99)			
Q19	Di,(1SS97)			
Q20	Di,(1SS97)			
Q21	Di,breakdown, (RD3.0EB1)	2.840 to 3.080V, 400mW		
Q22	Di,breakdown, (RD3.0EB1)	2.840 to 3.080V, 400mW		
Q23	Tr,(2SC2570A)			
Q24	Tr,(2SC2570A)			
Q25	Tr,(2SC2570A)			
Q26	Di,breakdown, (RD3.6EB1)	3.455 to 3.695V, 400mW		
Q27	Di,breakdown, (RD3.6EB1)	3.455 to 3.695V, 400mW		
Q28	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q29	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q30	Not assigned			
Q31	Not assigned			
Q32	Tr,(2SC2570A)			
Q33	Tr,(2SC2570A)			
Q34	IC,(μPC1656C)			
Q35	IC,(μPC1656C)			
Q36	IC,(μPC1656C)			
Q37	Tr,(2SC2570A)			
Q38	Tr,(2SC1907)			
Q39	Tr,(2SA1154)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
Q40	Tr,(2SC1907)			
Q41	Tr,(2SA1154)			
Q42	Tr,(2SC2570A)			
Q43	Tr,(2SC2570A)			
Q44	Tr,(2SC2570A)			
Q45	Tr,(2SC2570A)			
Q46	Di,(FC-51M)			
Q47	Di,(FC-51M)			
Q48	Di,(FC-51M)			
Q49	Tr,(2SD571)			
Q50	Tr,(2SC2570A)			
Q51	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q52	IC,(MC10H102L)			
Q53	IC,(74LS32)			
Q54	IC,(SN74ALS574N)			
Q55	IC,(SN74ALS574N)			
Q56	IC,(TD62003P)			
Q57	IC,(μPC251C)			
Q58	IC,(μTC4052BP)			
Q59	IC,(μPC251C)			
Q60	IC,(MC10H116L)			
Q61	IC,(TC4053BP)			
Q62	Di,(1S953)			
Q63	IC,(MC10H116L)			
Q64	IC,(MC10H107L)			
Q65	IC,(MC10H102L)			
Q66	IC,(MC10H116L)			
Q67	IC,(μPC151C)			
Q68	Tr,(2SC2570A)			
Q69	Tr,(2SC2570A)			
Q70	Tr,(2SC2570A)			
Q71	Tr,(2SC2570A)			
Q72	Tr,(2SC2570A)			
Q73	Di,(FC-51M)			
Q74	Di,(FC-51M)			
Q75	Di,(FC-51M)			
Q76	Di,(1SS99)			
Q77	Di,(1SS99)			
Q78	IC,(μPC151C)			
Q79	Di,(1SS97)			ME520 A/C
Q80	Di,(1SS97)			ME520 A/C
Q81	IC,(μPC151C)			
Q82	Di,breakdown,(RD5.1EB)	4.8 to 5.4V,400mW		
Q83	Di,(1S953)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
R 1	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R 2	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R 3	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 4	CF,(ARD25T751J)	750Ω,±5%,1/4W		
R 5	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 6	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 7	CF,(ARD25T200J)	20Ω,±5%,1/4W		
R 8	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 9	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R10	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R11	CF,(ARD25T270J)	27Ω,±5%,1/4W		
R12	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R13	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R14	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R15	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R16	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R17	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R18	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R19	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R20	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R21	CF,(ARD25T620J)	62Ω,±5%,1/4W		
R22	Var,MF,(RJ-6P 100Ω)	100Ω,1/2W		
R23	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R24	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R25	CF,(ARD25T200J)	20Ω,±5%,1/4W		
R26	CF,(ARD25T121J)	120Ω,±5%,1/4W		
R27	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R28	CF,(ARD25T202J)	2kΩ,±5%,1/4W		
R29	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R30	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R31	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R32	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R33	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R34	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R35	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R36	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R37	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R38	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R39	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R40	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R41	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R42	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R43	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R44	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R45	MF,(RM14K2E8250D)	825Ω,±0.5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
R46	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R47	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R48	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R49	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R50	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R51	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R52	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R53	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R54	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R55	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R56	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R57	CF,(ARD25T620J)	62Ω,±5%,1/4W		
R58	Var,MF,(RJ-6P 100Ω)	100Ω,1/2W		
R59	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R60	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R61	CF,(ARD25T200J)	20Ω,±5%,1/4W		
R62	CF,(ARD25T121J)	120Ω,±5%,1/4W		
R63	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R64	CF,(ARD25T202J)	2kΩ,±5%,1/4W		
R65	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R66	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R67	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R68	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R69	CF,(ARD25T560J)	56Ω,±5%,1/4W		
R70	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R71	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R72	CF,(ARD25T201J)•	200Ω,±5%,1/4W		
R73	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R74	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R75	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R76	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R77	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R78	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R79	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R80	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R81	MF,(RN14K2E8250D)	825Ω,±0.5%,1/4W		
R82	CF,(ARD25T121J)	120Ω,±5%,1/4W		ME520 A/C
R83	MF,(RN14K2E1960D)	196Ω,±0.5%,1/4W		ME520 A/C
R84	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R85	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R86	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R87	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R88	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R89	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R90	CF,(ARD25T103J)	10kΩ,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
R91	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R92	CF,(ARD25T201J)	200Ω,±5%,1/4W		
R93	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R94	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R95	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R96	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R97	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R98	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R99	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R100	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R101	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R102	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R103	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R104	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R105	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R106	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R107	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R108	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R109	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R110	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R111	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R112	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R113	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R114	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R115	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R116	CF,(ARD25T182J)	1.8kΩ,±5%,1/4W		
R117	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R118	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R119	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R120	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R121	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R122	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R123	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R124	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R125	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R126	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R127	CF,(ARD25T333J)	33kΩ,±5%,1/4W		
R128	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R129	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R130	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R131	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R132	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R133	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R134	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R135	CF,(ARD25T750J)	75Ω,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
R136	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R137	CF,(ARD25T333J)	33kΩ,±5%,1/4W		
R138	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R139	MF,(RN14K2E2001D)	2.0kΩ,±0.5%,1/4W		
R140	MF,(RN14K2E4021D)	4.02kΩ,±0.5%,1/4W		
R141	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R142	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R143	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R144	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R145	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R146	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R147	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R148	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R149	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R150	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R151	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R152	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R153	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R154	CF,(ARD25T334J)	330kΩ,±5%,1/4W		
R155	Not assigned			
R156	Not assigned			
R157	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R158	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R159	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R160	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R161	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R162	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R163	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R164	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R165	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R166	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R167	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R168	CF,(ARD25T333J)	33kΩ,±5%,1/4W		
R169	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R170	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R171	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R172	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R173	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R174	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R175	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R176	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R177	CF,(ARD25T333J)	33kΩ,±5%,1/4W		
R178	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R179	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R180	CF,(ARD25T101J)	100Ω,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
R181	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R182	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R183	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R184	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R185	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R186	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R187	MF,(RN14K2E3570D)	357Ω,±0.5%,1/4W		
R188	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R189	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R190	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R191	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R192	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R193	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R194	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R195	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R196	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R197	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R198	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R199	MF,(RN14K2E1692D)	16.9kΩ,±0.5%,1/4W		Parallel
	MF,(ARD25T104J)	100kΩ,±5%,1/4W		Parallel
R200	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R201	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R202	Not assigned			
R203	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R204	Not assigned			
R205	MF,(NRN1/4C4 226RD)	226Ω,±0.5%,1/4W		
R206	MF,(NRN1/4C4 226RD)	226Ω,±0.5%,1/4W		
R207	MF,(NRN1/4C4 56.2RD)	56.2Ω,±0.5%,1/4W		
R208	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R209	CF,(ARD25T121J)	120Ω,±5%,1/4W		
R210	CF,(ARD25T153J)	15k Ω,±5%,1/4W		
R211	Not assigned			
R212	Not assigned			
R213	Not assigned			
R214	CF,(ARD25T332J)	3.3k Ω,±5%,1/4W		
R215	CF,(ARD25T6R8J)	6.8 Ω,±5%,1/4W		
R216	CF,(ARD25T222J)	2.2k Ω,±5%,1 4W		
R217	MF,(RN14K2E3011D)	3.01k Ω,±0.5%,1 4W		
R218	MF,(RN14K2E2611D)	2.61k Ω,±0.5%,1/4W		
R219	CF,(ARD25T222J)	2.2k Ω,±5%,1 4W		
R220	CF,(ARD25T102J)	1k Ω,±5%,1/4W		
R221	CF,(ARD25T102J)	1k Ω,±5%,1/4W		
R222	CF,(ARD25T152J)	1.5k Ω,±5%,1 4W		
R223	CF,(ARD25T152J)	1.5k Ω,±5%,1/4W		
R224	CF,(ARD25T222J)	2.2k Ω,±5%,1/4W		
R225	CF,(ARD25T222J)	2.2k Ω,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z4, INPUT

CKT REF	DESCRIPTION	RATING		NOTE
R226	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R227	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R228	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R229	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R230	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R231	MF,(NRN1/4C4 439ΩD)	439Ω,±0.5%,1/4W		
R232	MF,(NRN1/4C4 439ΩD)	439Ω,±0.5%,1/4W		
R233	MF,(NRN1/4C4 26.7ΩGD)	26.7Ω,±0.5%,1/4W		
S 1	Slide switch,(AS2D-6M)			

( ): Manufacturer's part number
• : Selected at factory

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Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E101)	100μF,±20%,25V		
C 2	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 3	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Elect,(CE04W1E101)	100μF,±20%,25V		
C 7	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 9	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C10	Elect,(CE04C1C330)	33μF,±20%,16V		
C11	Elect,(CE04C1C330)	33μF,±20%,16V		
C12	Cer,(CC924CH1H470JY)	47pF,±5%,50V		
C13	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C14	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C15	Cer,(CC924CH1H470J)	47pF,±5%,50V		
C16	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C17	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C18	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C19	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C20	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C21	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C22	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C23 to C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
Q 1	Di,(1S953)			
Q 2	Di,(1SS97)			
Q 3	Di,(1SS97)			
Q 4	IC,(HD100102)			
Q 5	Di,(1SS97)			
Q 6	Di,(1SS97)			
Q 7	IC,(MC10H109L)			
Q 8	IC,(MC10H102L)			
Q 9	Tr,(2SA836)			
Q10	Tr,(2SA836)			
Q11	IC,(HD10131)			
Q12	IC,(MC10H131L)			
Q13	IC,(74LS138)			
Q14	IC,(SN74ALS574N)			
Q15	IC,(SN74ALS574N)			
Q16	IC,(SN74ALS574N)			
Q17	IC,(HD10124)			
Q18	IC,(HD10124)			
Q19	IC,(HD10136)			

( ): Manufacturer's part number
• : Selected at factory

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Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
Q20	IC,(HD10136)			
Q21	IC,(HD10136)			
Q22	IC,(MC10H101L)			
Q23	IC,(HD10131)			
Q24	IC,(HD10105)			
Q25	IC,(MC10H105L)			
Q26	IC,(HD10231)			
Q27	IC,(HD10231)			
Q28	IC,(MC10H116L)			
Q29	IC,(MC10H102L)			
Q30	IC,(MC10H102L)			
Q31	IC,(MC10H102L)			
Q32	IC,(HD10231)			
Q33	IC,(HD10116)			
Q34	IC,(HD100101)			
Q35	IC,(HD10231)			
Q36	IC,(HD100101)			
Q37	IC,(MC10H131L)			
Q38	IC,(MC10H116L)			
Q39	IC,(MC10H116L)			
Q40	IC,(MC10H102L)			
Q41	IC,(MC10H131L)			
Q42	IC,(HD10131)			
Q43	IC,(HD10102)			
Q44	IC,(MC10H101L)			
Q45	IC,(HD10116)			
Q46	IC,(MC10H116L)			
Q47	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q48	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q49	IC,(HD10101)			
Q50	Di,(1S2208)			
Q51	Di,(FC53M)			
Q52	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q53	IC,(MC10H102L)			
Q54	IC,(HD10101)			
Q55	IC,(HD10101)			
R 1	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R 2	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 3	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 4	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 5	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

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Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
R 6	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R 7	Not assigned			
R 8	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R 9	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R10	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R11	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R12	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R13	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R14	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R15	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R16	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R17	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R18	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R19	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R20	Not assigned			
R21	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R22	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R23	CF,(ARD25T182J)	1.8kΩ,±5%,1/4W		
R24	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R25	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R26	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R27	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R28	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R29	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R30	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R31	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R37	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R38	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R39	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R40	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R41	Not assigned			
R42	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R43	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R44	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R45	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R46	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R47	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
• : Selected at factory

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Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
R48	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R49	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R50	Single in-line array, (IHR-8-102JA)	1k Ω x 8,1/8W		
R51	Not assigned			
R52	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R53	Single in-line array, (IHR-4-222JA)	2.2kΩ x 4,1/8W		
R54	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R55	Single in-line array, (IHR-4-222JA)	2.2kΩ x 4,1/8W		
R56	Not assigned			
R57	Single in-line array, (IHR-4-222JA)	2.2kΩ x 4,1/8W		
R58	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R59	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R60	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R61	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R62	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R65	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R66	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R67	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R68	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R69	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R70	Not assigned			
R71	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R72	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R73	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R74	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R75	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R76	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R77	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R78	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R79	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R80	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R81	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R82	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R83	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R84	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R85	CF,(ARD25T181J)	180Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
R86	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R87	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R88	Single in-line array, (IHR-4-471JA)	470Ω x 4,1/8W		
R89	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R90	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R91	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R92	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R93	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R94	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R95	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R96	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R97	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R98	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R99	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R100	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R101	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R102	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R103	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R104	Not assigned			
R105	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R106	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R107	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R108	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R109	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R110	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R111	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R112	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R113	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R114	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R115	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		ME520 A/C
R116	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R117	Not assigned			
R118	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R119	MF,(RN14K2E1001D)	1kΩ,±0.5%,1/4W		
R120	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R121	Var,MF,(RJ-6P 1kΩ)	1kΩ,1/2W		
R122	MF,(RN14K2E1001D)	1kΩ,±0.5%,1/4W		
R123	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R124	Not assigned			
R125	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R126	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R127	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R128	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R129	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R130	CF,(ARD25T681J)	680Ω,±5%,1/4W		ME520 A/C

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
R131	CF,(ARD25T681J)	680Ω,±5%,1/4W		ME520 A/C
R132	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R133	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R134	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R135	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R136	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R137	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R138	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R139	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R140	Not assigned			
R141	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R142	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R143	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R144	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R145	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R146	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R147	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R148	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R149	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R150	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R151	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R152	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R153	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R154	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R155	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R156	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R157	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R158	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R159	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R160	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R161	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R162	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R163	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R164	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R165	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R166	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R167	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R168	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R169	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R170	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R171	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R172	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R173	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R174 to R187	CF,(ARD25T111J)	110Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z5, CMI

CKT REF	DESCRIPTION	RATING		NOTE
R188	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R189	Not assigned			
R190	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R191	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R192	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R193	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R194	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R195	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R196	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R197	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R198	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R199	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R200	Not assigned			
R201	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R202	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R203	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R204	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R205	Not assigned			
R206	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R207	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R208	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R209	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R210	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R211	CF,(ARD25T681J)	680Ω,±5%,1/4W		
Z 1	DELAY LINE,(FDY6005)	6ns		
Z 2	DELAY LINE,(FDY3005)	3ns		
Z 3	DELAY LINE,(FDS020S)	0.75ns		
Z 4	DELAY LINE,(FDY5005)	5ns		
Z 5	DELAY LINE,(FDY4005)	4ns		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z6, AMI/HDB3

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1A101)	100μF,±20%,10V		
C 2	Not assigned			
C 3	Not assigned			
C 4	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C 5	Elect,(CE04W1A101)	100μF,±20%,10V		
C 6	Not assigned			
C 7	Not assigned			
C 8	Not assigned			
C 9	Not assigned			
C10	Not assigned			
C11	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C12 to C32	Not assigned			
C33	Cer,(CC45CH1H240JY)	24pF,±5%,50V		
C34	Cer,(CC45CH1H060DY)	6pF,±0.5pF,50V		
C35	Cer,(CC924CH1H151J)	150pF,±5%,50V		
C36	Cer,(CC924CH1H430J)	43pF,±5%,50V		
C37	Cer,(RPE111CH821G50)	820pF,±2%,50V		
C38	Cer,(CC924CH1H221J)	220pF,±5%,50V		
C39	Cer,(CK924C1H102M)	1000pF,±20%,50V		}Parallel
	Cer,(CK924C1H222M)	2200pF,±20%,50V		
C40	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C41	Cer,(CC924CH1H360J)	36pF,±5%,50V		
C42	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C43	Cer,(CC45CH1H220JY)	22pF,±5%,50V		
C44	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C45	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C46	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C47	Cer,(CC924CH1H101J)	100pF,±5%,50V		
C48	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C52	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C53	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C54	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C55	Cer,(CC924CH1H102J)	1000pF,±5%,50V		}Parallel
	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C56	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C57	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C58	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C59	Not assigned			
C60	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z6, AMI/HDB3

CKT REF	DESCRIPTION	RATING		NOTE
C61	Not assigned			
C62	Not assigned			
C63	Not assigned			
C64	Not assigned			
C65	Not assigned			
C66 to C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C93	Elect,(CE04W1E101)	100μF,±20%,25V		
C94	Elect,(CE04W1E101)	100μF,±20%,25V		
C95	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C96	Cer,(RPE113F105Z50)	1μF,+80/-20%,50V		
C97	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Cer,(CC924CH1H101J)	100pF,±5%,50V		
L 1	Coil,(SP0408-R68K)	0.68μH		
L 2	Not assigned			
L 3	Coil,(SP0408-2R7K)	2.7μH		
L 4	Not assigned			
L 5	Coil,(SP0408-8R2K)	8.2μH		
L 6	Not assigned			
L 7	Coil,(LF8-220K)	22μH		
L 8	Not assigned			
L 9	Coil,(SP0408-R33K)	0.33μH		
L10	Coil,(SP0408-R15K)	0.15μH		
L11	Coil,(SP0408-2R2K)	2.2μH		
L12	Coil,(SP0408-1R0K)	1.0μH		
L13	Coil,(LF8-100K)	10μH		
L14	Coil,(SP0408-4R7K)	4.7μH		
L15	Coil,(LF8-220K)	22μH		
L16	Coil,(LF8-100K)	10μH		
M 1	Not assigned			
Q 1	Tr,(2SA836)			
Q 2	Tr,(2SA836)			
Q 3	FET,(3SK47)			
Q 4	FET,(3SK47)			
Q 5	FET,(3SK47)			

( ): Manufacturer's part number
* : Selected at factory

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Parts List : R-Z6, AMI/HDB3

CKT REF	DESCRIPTION	RATING		NOTE
Q 6	FET,(3SK47)			
Q 7	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q 8	Not assigned			
Q 9	IC,(SN74ALS574N)			
Q10	IC,(μPC624D)			
Q11	IC,(μPC451C)			
Q12	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
Q13	IC,(74LS32)			
Q14	IC,(SN74ALS574N)			
Q15	IC,(HD10124)			
Q16	IC,(HD10124)			
Q17	IC,(HD10116)			
Q18	IC,(MC10H105L)			
Q19	IC,(HD10131)			
Q20	IC,(HD10105)			
Q21	IC,(HD10131)			
Q22	IC,(MC10H105L)			
Q23	IC,(MC10H105L)			
Q24	IC,(MC10H105L)			
Q25	IC,(MC10H105L)			
Q26	IC,(HD10101)			
Q27	IC,(HD10110)			
Q28	IC,(HD10131)			
Q29	IC,(HD10102)			
Q30	IC,(HD10131)			
Q31	IC,(HD10131)			
Q32	IC,(HD10102)			
Q33	IC,(HD10104)			
Q34	IC,(HD10102)			
Q35	IC,(HD10131)			
Q36	IC,(HD10111)			
Q37	IC,(HD10131)			
Q38	IC,(HD10131)			
Q39	IC,(HD10131)			
Q40	IC,(HD10102)			
Q41	IC,(HD10102)			
Q42	IC,(HD10101)			
R 1	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 2	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 3	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 4	CF,(ARD25T222J)	2.2k ,±5%,1/4W		
R 5	CF,(ARD25T222J)	2.2k ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z6, AMI/HDB-3

CKT REF	DESCRIPTION	RATING		NOTE
R 6	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R 7	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R 8	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R 9	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R10	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R11	Single in-line array, (IHR-4-471JA)	470Ω x 4,1/8W		
R12	Single in-line array, (IHR-6-471JA)	470Ω x 6,1/8W		
R13	Single in-line array, (IHR-8-681JA)	680Ω x 8,1/8W		
R14	Single in-line array, (IHR-6-471JA)	470Ω x 6,1/8W		
R15	Single in-line array, (IHR-6-471JA)	470Ω x 6,1/8W		
R16	Single in-line array, (IHR-4-471JA)	470Ω x 4,1/8W		
R17 to R27	Not assigned			
R28	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R29	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R30	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R31	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R32	CF,(ARD25T182J)	1.8kΩ,±5%,1/4W		
R33	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R34	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R35	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R36	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R37	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R38	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R39	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R40	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R41	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R42	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R43	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R44	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R45	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R46	Not assigned			
R47	Not assigned			
R48	Not assigned			
R49	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R50	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R51	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R52 to R66	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z6, AMI/HDB3

CKT REF	DESCRIPTION	RATING		NOTE
R67	MF,(RN14K2E2051D)	2.05kΩ,±0.5%,1/4W		
R68	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W		
R69	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R70	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R71	MF,(RN14K2E2001D)	2.00kΩ,±0.5%,1/4W		
R72	MF,(RN14K2E3321D)	3.32kΩ,±0.5%,1/4W		
R73	MF,(RN14K2E3321D)	3.32kΩ,±0.5%,1/4W		
R74	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R75	MF,(RN14K2E2871D)	2.87kΩ,±0.5%,1/4W		
R76	MF,(RN14K2E1502D)	15.0kΩ,±0.5%,1/4W		
R77	MF,(RN14K2E7501D)	7.5kΩ,±0.5%,1/4W		
R78	MF,(RN14K2E1542D)	15.4kΩ,±0.5%,1/4W		
R79	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R80	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R81	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R82	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R83	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R84	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R85	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R86	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R87	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R88	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R89	Not assigned			
R90	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R91	Not assigned			
R92	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R93	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R94	MF,(RN14K2E1502D)	15.0kΩ,±0.5%,1/4W		
R95	Var,MF,(RJ-6P 2kΩ)	2kΩ,1/2W		
R96	Var,MF,(RJ-6P 2kΩ)	2kΩ,1/2W		
R97	MF,(RN14K2E1211D)	1.21kΩ,±0.5%,1/4W		
R98	MF,(RN14K2E1072D)	10.7kΩ,±0.5%,1/4W		
R99	Not assigned			
R100	Not assigned			
R101	Not assigned			
R102	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R103	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R104	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R105	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R106	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R107	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R108	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R109	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R110	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z6, AMI/HDB3

CKT REF	DESCRIPTION	RATING		NOTE
R111	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R112	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R113	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R114	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R115	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R116	Var,MF,(RJ-9X 100Ω)	100Ω,1/2W		
R117	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R118	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R119	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R120	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R121	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R122	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R123	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R124	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R125	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R126	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R127	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R128	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R129	Var,MF,(RJ-9X 100Ω)	100Ω,1/2W		
R130	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R131	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R132	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R133	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R134	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R135	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R136	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R137	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R138	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R139	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R140	MF,(RN14K2E90R9D)	90.9Ω,±0.5%,1/4W		
R141	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R142	Var,MF,(RJ-9X 100Ω)	100Ω,1/2W		
R143	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R144	MF,(RN14K2E1152D)	11.5kΩ,±0.5%,1/4W		
R145	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R146	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R147	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R148	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R149	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R150	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R151	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R152	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R153	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R154	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R155	Var,MF,(RJ-9X 100Ω)	100Ω,1/2W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z6, AMI/HDB3

CKT REF	DESCRIPTION	RATING		NOTE
R156	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R157	MF,(RN14K2E1132D)	11.3kΩ,±0.5%,1/4W		
R158	CF,(ARD25T821J)	820Ω,±5%,1/4W		
R159	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R160	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R161	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R162	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R163	CF,(ARD25T561J)	560Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E101)	100μF,±20%,25V		
C 2	Elect,(CE04W1E101)	100μF,±20%,25V		
C 3	Not assigned			
C 4	Not assigned			
C 5	Not assigned			
C 6	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C 7	Cer,(CC924CH1H101J)	100pF,±5%,50V		
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 9	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C10	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C11	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C12	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C13	Not assigned			
C14 to C34	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C35 to C48	Not assigned			
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C52	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C53	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C54	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
Q 1	Di,(1S953)			
Q 2	Di,(1S953)			
Q 3	Not assigned			
Q 4	Not assigned			
Q 5	Not assigned			
Q 6	Not assigned			
Q 7	Not assigned			
Q 8	IC,(74LS138)			
Q 9	IC,(SN74ALS574N)			
Q10	IC,(SN74ALS574N)			
Q11	IC,(SN74ALS574N)			
Q12	Not assigned			
Q13	Not assigned			
Q14	IC,(MC10176L)			
Q15	IC,(MC10176L)			
Q16	IC,(MC10176L)			
Q17	IC,(MC10176L)			
Q18	IC,(MC10113L)			
Q19	IC,(MC10113L)			
Q20	IC,(MC10113L)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
Q21	IC,(HD10104)			
Q22	IC,(HD10131)			
Q23	Not assigned			
Q24	Not assigned			
Q25	IC,(HD10110)			
Q26	IC,(HD10110)			
Q27	IC,(HD10107)			
Q28	IC,(MC10176L)			
Q29	IC,(MC10H116L)			
Q30	IC,(MC10176L)			
Q31	IC,(MC10H102L)			
Q32	IC,(MC10H107L)			
Q33	IC,(MC10H102L)			
Q34	IC,(HD10105)			
Q35	IC,(HD10136)			
Q36	IC,(MC10H102L)			
Q37	IC,(MC10H131L)			
Q38	IC,(HD10136)			
Q39	IC,(HD10136)			
Q40	IC,(MC10H131L)			
Q41	IC,(HD10131)			
Q42	IC,(HD10131)			
Q43	IC,(MC10H102L)			
Q44	IC,(MC10176L)			
Q45	IC,(HD10131)			
Q46	IC,(MC10176L)			
Q47	IC,(MC10176L)			
Q48	IC,(HD10107)			
Q49	IC,(MC10H131L)			
Q50	IC,(HD10131)			
Q51	IC,(HD10136)			
Q52	IC,(HD10104)			
Q53	IC,(MC10H131L)			
Q54	IC,(MC10H102L)			
Q55	IC,(MC10H131L)			
Q56	IC,(HD10101)			
Q57	IC,(MC10H102L)			
Q58	Di,(1S953)			
Q59	IC,(MD10H101L)			
Q60	IC,(MC10176L)			
Q61	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R 1	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R 2	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R 3	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R 4	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R 5	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R 6	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R 7	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R 8	Dual in-line array, (AHR-152JB1)	1.5kΩ,±5%,1/8W		
R 9	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R10	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R11	Dual in-line array, (AHR-152JB1)	2.2kΩ,±5%,1/8W		
R12	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R13	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R14	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R15	Not assigned			
R16	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R17	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R18	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R19	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R20	Not assigned			
R21	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R22	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R24	Not assigned			
R25	Not assigned			
R26	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R28	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R29	Not assigned			
R30	Not assigned			
R31	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R32	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R33	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R34	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R35	CF,(ARD25T131J)	130Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R36	Not assigned			
R37	Not assigned			
R38	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R39	CF,(ARD25T131J)	130 ,±5%,1/4W		
R40	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R41	CF,(ARD25T102J)	1k..,±5%,1/4W		
R42	Var,MF,(RJ-6S 1kΩ)	1k..,1/2W		
R43	CF,(ARD25T271J)	270Ω,±5%,1/4W		
R44	Not assigned			
R45	Not assigned			
R46	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R47	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R48	CF,(ARD25T681J)	680..,±5%,1/4W		
R49	CF,(ARD25T391J)	390..,±5%,1/4W		
R50	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R51	Not assigned			
R52	Not assigned			
R53	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R54	CF,(ARD25T391J)	390..,±5%,1/4W		
R55	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R56	Not assigned			
R57	Not assigned			
R58	Not assigned			
R59	Not assigned			
R60	Not assigned			
R61	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R62	CF,(ARD25T681J)	680..,±5%,1/4W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T391J)	390..,±5%,1/4W		
R65	CF,(ARD25T391J)	390..,±5%,1/4W		
R66	CF,(ARD25T391J)	390..,±5%,1/4W		
R67	Not assigned			
R68	CF,(ARD25T681J)	680 ,±5%,1/4W		
R69	Not assigned			
R70	CF,(ARD25T681J)	680 ,±5%,1/4W		
R71	CF,(ARD25T681J)	680 ,±5%,1/4W		
R72	CF,(ARD25T681J)	680 ,±5%,1/4W		
R73	CF,(ARD25T681J)	680 ,±5%,1/4W		
R74	CF,(ARD25T391J)	390 ,±5%,1/4W		
R75	CF,(ARD25T681J)	680 ,±5%,1/4W		
R76	CF,(ARD25T681J)	680 ,±5%,1/4W		
R77	CF,(ARD25T391J)	390 ,±5%,1/4W		
R78	CF,(ARD25T681J)	680 ,±5%,1/4W		
R79	CF,(ARD25T681J)	680 ,±5%,1/4W		
R80	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R81	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R82	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R83	Not assigned			
R84	Not assigned			
R85	Not assigned			
R86	Single in-line array, (IHR-4-681JA)	680. x 4,1/8W		
R87	Not assigned			
R88	Not assigned			
R89	Not assigned			
R90	CF,(ARD25T221J)	220 ,±5%,1/4W		
R91	Not assigned			
R92	CF,(ARD25T391J)	390..,±5%,1/4W		
R93	CF,(ARD25T681J)	680..,±5%,1/4W		
R94	CF,(ARD25T681J)	680..,±5%,1/4W		
R95	Not assigned			
R96	CF,(ARD25T391J)	390..,±5%,1/4W		
R97	CF,(ARD25T681J)	680..,±5%,1/4W		
R98	CF,(ARD25T681J)	680..,±5%,1/4W		
R99	Not assigned			
R100	Single in-line array, (IHR-4-681JA)	680.. x 4,1/8W		
R101	CF,(ARD25T391J)	390..,±5%,1/4W		
R102	Not assigned			
R103	CF,(ARD25T131J)	130 ,±5%,1/4W		
R104	CF,(ARD25T681J)	680..,±5%,1/4W		
R105	Not assigned			
R106	Not assigned			
R107	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R108	CF,(ARD25T681J)	680 ,±5%,1/4W		
R109	CF,(ARD25T681J)	680 ,±5%,1/4W		
R110	CF,(ARD25T681J)	680 ,±5%,1/4W		
R111	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R112	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R113	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R114	CF,(ARD25T681J)	680 ,±5%,1/4W		
R115	CF,(ARD25T681J)	680 ,±5%,1/4W		
R116	Not assigned			
R117	CF,(ARD25T681J)	680. ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R118	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R119	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R120	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R121	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R122	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R123	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R124	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R125	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R126	Not assigned			
R127	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R128	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R129	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R130	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R131	Not assigned			
R132	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R133	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R134	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R135	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R136	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R137	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R138	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R139	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R140	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R141	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R142	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R143	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R144	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R145	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R146	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R147	Not assigned			
R148	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R149	Not assigned			
R150	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R151	Not assigned			
R152	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R153	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R154	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R155	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R156	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R157	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R158	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R159	Not assigned			
R160	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z7, REGENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
R161	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R162	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R163	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R164	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R165	Not assigned			
R166	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R167	Not assigned			
R168	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R169	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R170	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R171	Not assigned			
R172	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R173	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R174	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R175	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R176	Not assigned			
R177	Not assigned			
R178	Not assigned			
R179	Not assigned			
R180	Not assigned			
R181	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R182	Single in-line array, (IHR-4-391JA)	390Ω x 4,1/8W		
R183	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R184	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R185	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R186	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 2	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 3	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 7	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 9	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C10	Not assigned			
C11	Not assigned			
C12	Not assigned			
C13	Elect,(CE04W1A101)	100μF,±20%,10V		
C14	Elect,(CE04W1A101)	100μF,±20%,10V		
C15 to C25	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C26	Elect,(CE04W1A101)	100μF,±20%,10V		
C27	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C28	Tant,(CS02H0J470M)	47μF,±20%,6.3V		
C29	Tant,(CS02H0J470M)	47μF,±20%,6.3V		
C30	Not assigned			
C31	Elect,(CE04W1A470)	47μF,±20%,10V		
C32	Elect,(CE04W1A470)	47μF,±20%,10V		
C33	Elect,(CE04W1A470)	47μF,±20%,10V		
C34	Elect,(CE04W1A470)	47μF,±20%,10V		
C35	Not assigned			
C36	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C37	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C38	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C39	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C40	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C41	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C42	Cer,(CC45CH1H220JY)	22pF,±5%,50V		
C43	Cer,(CC45CH1H220JY)	22pF,±5%,50V		
C44	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C45	Not assigned			
C46	Not assigned			
C47	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C48	Not assigned			
C49	Not assigned			
C50	Not assigned			
C51	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C52	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C53	Cer,(CK924C1H102M)	1000pF,±20%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
C54	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C55	Not assigned			
C56	Not assigned			
C57	Not assigned			
C58	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C59	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C60	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C61	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C62	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C63	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C64	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C65	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C66	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C67	Not assigned			
C68	Cer,(CK924C1H102M)	1000pF,±20%,50V		
C69	Var,Cer,(TZ03R200A)	4.2 to 20pF,100V		
C70	Not assigned			
C71	Not assigned			
C72	Not assigned			
C73	Elect,(CE04W1E101)	100μF,±20%,25V		
C74	Elect,(CE04W1E101)	100μF,±20%,25V		
L 1	Coil,(SP0408-R47K)	0.47μH		
L 2	Coil,(SP0408-R47K)	0.47μH		
L 3	Coil,(SP0408-R47K)	0.47μH		
L 4	Coil,(SP0408-R47K)	0.47μH		
L 5	Coil,(SP0408-2R2K)	2.2μH		
L 6	Coil,(SP0408-2R2K)	2.2μH		
L 7	Coil,(SP0408-R47K)	0.47μH		
L 8	Coil,(SP0408-R47K)	0.47μH		
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Not assigned			
C16	Coil,(SP0408-R15K)	0.15μH		
Q 1	Di,(1S953)			
Q 2	Not assigned			
Q 3	Not assigned			
Q 4	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
Q 5	IC,(HD10102)			
Q 6	IC,(HD10109)			
Q 7	IC,(74LS541)			
Q 8	IC,(74LS138)			
Q 9	IC,(HD10116)			
Q10	IC,(SN74ALS574N)			
Q11	IC,(HD10136)			
Q12	IC,(MC10176L)			
Q13	IC,(HD10102)			
Q14	Not assigned			
Q15	IC,(MC10H131L)			
Q16	Not assigned			
Q17	IC,(SN74ALS574N)			
Q18	IC,(SN74ALS574N)			
Q19	IC,(SN74ALS574N)			
Q20	IC,(SN74ALS574N)			
Q21	IC,(HD11164)			
Q22	IC,(HD10164)			
Q23	IC,(HD10164)			
Q24	IC,(HD10164)			
Q25	IC,(HD10231)			
Q26	IC,(HD10131)			
Q27	IC,(MC10138L)			
Q28	IC,(HD10131)			
Q29	Not assigned			
Q30	IC,(SN74ALS574N)			
Q31	IC,(74LS00)			
Q32	IC,(HD10124)			
Q33	IC,(HD10124)			
Q34	IC,(74LS04)			
Q35	IC,(HI3-201-5)			
Q36	IC,(HI3-201-5)			
Q37	IC,(TC4051BP)			
Q38	IC,(74LS123)			
Q39	IC,(μPC251C)			
Q40	Not assigned			
Q41	Not assigned			
Q42	Not assigned			
Q43	Di,(1S953)			
Q44	IC,(74LS143)			
Q45	Not assigned			
Q46	Tr,(2SA836)			
Q47	Di,(1S953)			
Q48	IC,(TD62003P)			
Q49	Tr,(2SA836)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
Q50	Tr,(2SA836)			
Q51	Tr,(2SA836)			
Q52	Di,(1S953)			
Q53	Di,(1S953)			
Q54	Di,(1S953)			
Q55	IC,(TD62002P)			
Q56	IC,(HD10116)			
Q57	IC,(HD10136)			
Q58	IC,(HD10231)			
Q59	IC,(MC10H102L)			
Q60	IC,(MC10H102L)			
Q61	IC,(MC10H116L)			
Q62	IC,(MC10H116L)			
Q63	IC,(MC10H116L)			
Q64	Not assigned			
Q65	IC,(μPC14305H)			
Q66	Not assigned			
Q67	IC,(HD10131)			
Q68	IC,(HD10105)			
R 1	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 2	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R 3	Not assigned			
R 4	Not assigned			
R 5	Not assigned			
R 6	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R 7	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 8	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R 9	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R10	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R11	Not assigned			
R12	Not assigned			
R13	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R14	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R15	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R16	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R17	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R18	Not assigned			
R19	Not assigned			
R20	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R21	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R22	Not assigned			
R23	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
R24	Not assigned			
R25	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R26	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R27	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R28	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R29	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R30	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R31	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R32	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Dual in-line array, (AHR-8-152JB)	1.5kΩ x 8,1/8W		
R37	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R38	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R39	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R40	Signel in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R41	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R42	Single in-line array, (IHR-8-102JA)	1kΩ x 8,1/8W		
R43	Dual in-line array, (AHR-8-152JB)	1.5kΩ x 8,1/8W		
R44	Dual in-line array, (AHR-8-152JB)	1.5kΩ x 8,1/8W		
R45	Dual in-line array, (AHR-8-152JB)	1.5kΩ x 8,1/8W		
R46	Dual in-line array, (AHR-8-152JB)	1.5kΩ x 8,1/8W		
R47	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R48	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R49	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R50	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R51	Not assigned			
R52	Not assigned			
R53	Not assigned			
R54	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
R55	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R56	Single in-line array, (IHR-8-222JA)	2.2kΩ x 8,1/8W		
R57	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R58	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R59	MF,(RN14K2E9091D)	9.09kΩ,±0.5%,1/4W		
R60	MF,(RN14K2E5111D)	5.11kΩ,±0.5%,1/4W		
R61	MF,(RN14K2E4871D)	4.87kΩ,±0.5%,1/4W		
R62	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R63	CF,(ARD25T123J)	12kΩ,±5%,1/4W		
R64	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R65	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R66	CF,(ARD25T123J)	12kΩ,±5%,1/4W		
R67	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R68	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R69	CF,(ARD25T153J)	15kΩ,±5%,1/4W		
R70	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R71	MF,(RN14K2E1001D)	1.0kΩ,±0.5%,1/4W		
R72	MF,(RN14K2E2211D)	2.21kΩ,±0.5%,1/4W		
R73	MF,(RN14K2E5110D)	511Ω,±0.5%,1/4W		
R74	MF,(RN14K2E1001D)	1.0kΩ,±0.5%,1/4W		
R75	MF,(RN14K2E2211D)	2.21kΩ,±0.5%,1/4W		
R76	MF,(RN14K2E1501D)	1.50kΩ,±0.5%,1/4W		
R77	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R78	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R79	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R80	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R81	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R82	CF,(ARD25T224J)	220kΩ,±5%,1/4W		
R83	Not assigned			
R84	Not assigned			
R85	Not assigned			
R86	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R87	Single in-line array, (IHR-4-272JA)	2.7kΩ x 4,1/8W		
R88	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R89	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R90	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R91	Not assigned			
R92	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R93	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R94	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R95	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
R96	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R97	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R98	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R99	Not assigned			
R100	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R101	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R102	Not assigned			
R103	Not assigned			
R104	Not assigned			
R105	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R106	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R107	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R108	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R109	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R110	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R111	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R112	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R113	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R114	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R115	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R116	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R117	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R118	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R119	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R120	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R121	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R122	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R123	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R124	MF,(RN14K2E3401D)	3.40kΩ,±0.5%,1/4W		
R125	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R126	MF,(RN14K2E2741D)	2.74kΩ,±0.5%,1/4W		
R127	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R128 to R139	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R140	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R141	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R142	Not assigned			
R143	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R144	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R145	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R146	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R147	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R148	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R149	CF,(ARD25T681J)	680Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z8, WORD

CKT REF	DESCRIPTION	RATING		NOTE
R150	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R151	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R152	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R153	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R154	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R155	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R156	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R157	CF,(ARD25T100J)	10Ω,±5%,1/4W		
Z 1	XTAL OSC,(VCXC)	16.384MHz		
Z 2	XTAL OSC,(VCXC)	16.896MHz		
Z 3	XTAL OSC,(VCXC)	22.912MHz		
Z 4	XTAL OSC,(VCXC)	23.2107MHz		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1A101)	100μF,±20%,10V		
C 2	Plast,(ECQ-P1 302FZ)	3000pF,±1%,100V		
C 3	Plast,(ECQ-P1 202FZ)	2000pF,±1%,100V		
C 4	Cer,(RPE111CH391G30)	390pF,±2%,50V		
C 5	Plast,(ECQ-P1 302FZ)	3000pF,±1%,100V		
C 6	Plast,(ECQ-P1 202FZ)	2000pF,±1%,100V		
C 7	Cer,(RPE111CH391G50)	390pF,±2%,50V		
C 8	Plast,(ECQ-P1 102FZ)	1000pF,±1%,100V		
C 9	Cer,(RPE111CH681G50)	680pF,±2%,50V		
C10	Cer,(RPE111CH131G50)	130pF,±2%,50V		
C11	Plast,(ECQ-P1 102FZ)	1000pF,±1%,100V		
C12	Cer,(RPE111CH681G50)	680pF,±2%,50V		
C13	Cer,(RPE111CH131G50)	130pF,±2%,50V		
C14	Cer,(RPE111CH241G50)	240pF,±2%,50V		
C15	Cer,(RPE111CH161G50)	160pF,±2%,50V		
C16	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C17	Cer,(RPE111CH241G50)	240pF,±2%,50V		
C18	Cer,(RPE111CH161G50)	160pF,±2%,50V		
C19	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C20	Cer,(CC924CH1H620J)	62pF,±5%,50V		
C21	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C22	Cer,(CC924CH1H080D)	8pF,±0.5pF,50V		
C23	Cer,(CC924CH1H620J)	62pF,±5%,50V		
C24	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C25	Cer,(CC924CH1H080D)	8pF,±0.5pF,50V		
C26 to C36	Not assigned			
C37	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C38	Cer,(CC924CH1H200J)	20pF,±5%,50V		
C39	Cer,(CC924CH1H040D)	4pF,±0.5pF,50V		
C40	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C41	Cer,(CC924CH1H200J)	20pF,±5%,50V		
C42	Cer,(CC924CH1H040D)	4pF,±0.5pF,50V		
C43	Cer,(CK924C1H103M)	0.01μF,±20%,50V		Q'ty 2, Parallel
C44	Plast,(ECQ-P1 133FZ)	0.013μF,±1%,100V		
C45	Plast,(ECQ-P1 302FZ)	3000pF,±1%,100V		
C46	Cer,(CK924C1H103M)	0.01μF,±20%,50V		Q'ty 2, Parallel
C47	Plast,(ECQ-P1 133FZ)	0.013μF,±1%,100V		
C48	Plast,(ECQ-P1 302FZ)	3000pF,±1%,100V		
C49	Plast,(ECQ-P1 752FZ)	7500pF,±1%,100V		
C50	Plast,(ECQ-P1 512FZ)	5100pF,±1%,100V		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
C51	Plast,(ECQ-P1 112FZ)	1100pF,±1%,100V		
C52	Plast,(ECQ-P1 752FZ)	7500pF,±1%,100V		
C53	Plast,(ECQ-P1 512FZ)	5100pF,±1%,100V		
C54	Plast,(ECQ-P1 112FZ)	1100pF,±1%,100V		
C55	Plast,(ECQ-P1 182FZ)	1800pF,±1%,100V		
C56	Plast,(ECQ-P1 122FZ)	1200pF,±1%,100V		
C57	Cer,(RPE111CH271G50)	270pF,±2%,50V		
C58	Plast,(ECQ-P1 182FZ)	1800pF,±1%,100V		
C59	Plast,(ECQ-P1 122FZ)	1200pF,±1%,100V		
C60	Cer,(RPE111CH271G50)	270pF,±2%,50V		
C61	Not assigned			
C62	Not assigned			
C63	Not assigned			
C64	Not assigned			
C65	Not assigned			
C66	Cer,(RPE111CH431G50)	430pF,±2%,50V		
C67	Cer,(RPE111CH301G50)	300pF,±2%,50V		
C68	Cer,(CC924CH1H680J)	68pF,±5%,50V		
C69	Cer,(RPE111CH431G50)	430pF,±2%,50V		
C70	Cer,(RPE111CH301G50)	300pF,±2%,50V		
C71	Cer,(CC924CH1H680J)	68pF,±5%,50V		
C72	Cer,(RPE111CH221G50)	220pF,±2%,50V		
C73	Cer,(RPE111CH151G50)	150pF,±2%,50V		
C74	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C75	Cer,(RPE111CH221G50)	220pF,±2%,50V		
C76	Cer,(RPE111CH151G50)	150pF,±2%,50V		
C77	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C78	Not assigned			
C79	Not assigned			
C80	Elect,(CE04W1E101)	100μF,±20%,25V		
C81	Elect,(CE04W1E101)	100μF,±20%,25V		
C82	Elect,(CE04W1A101)	100μF,±20%,10V		
C83	Elect,(CE04W1A101)	100μF,±20%,10V		
C84	Not assigned			
C85	Not assigned			
C86 to C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Not assigned			
C100	Not assigned			
C101	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C102	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C103	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C104	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C105	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
J 1	Plug,(DF1-5P-2.5DS)	5P		
K 1	Reed relay,(PG1C-05D)			
K 2	Reed relay,(PG1C-05D)			
L 1	Coil,(LF8-102K)	1000μH		
L 2	Coil,(LF8-102K)	1000μH		
L 3	Coil,(LF8-561K)	560μH		
L 4	Coil,(LF8-102K)	1000μH		
L 5	Coil,(LF8-102K)	1000μH		
L 6	Coil,(LF8-561K)	560μH		
L 7	Coil,(LF8-331K)	330μH		
L 8	Coil,(LF8-331K)	330μH		
L 9	Coil,(LF8-181K)	180μH		
L10	Coil,(LF8-331K)	330μH		
L11	Coil,(LF8-331K)	330μH		
L12	Coil,(LF8-181K)	180μH		
L13	Coil,(TP0206-820K)	82μH		
L14	Coil,(TP0206-820K)	82μH		
L15	Coil,(TP0206-470K)	47μH		
L16	Not assigned			
L17	Not assigned			
L18	Not assigned			
L19	Not assigned			
L20	Not assigned			
L21	Coil,(TP0206-820K)	82μH		
L22	Coil,(TP0206-820K)	82μH		
L23	Coil,(TP0206-470K)	47μH		
L24	Coil,(SP0408-220K)	22μH		
L25	Coil,(SP0408-220K)	22μH		
L26	Coil,(SP0407-120K)	12μH		
L27	Coil,(SP0408-220K)	22μH		
L28	Coil,(SP0408-220K)	22μH		
L29	Coil,(SP0408-120K)	12μH		
L30	Not assigned			
L31	Not assigned			
L32	Not assigned			
L33	Not assigned			
L34	Not assigned			
L35	Not assigned			
L36	Coil,(SP0408-100K)	10μH		
L37	Coil,(SP0408-100K)	10μH		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
L38	Coil,(SP0408-5R6K)	5.6μH		
L39	Coil,(SP0408-100K)	10μH		
L40	Coil,(SP0408-100K)	10μH		
L41	Coil,(SP0408-5R6K)	5.6μH		
L42	Coil,(LH1-682K)	6800μH		
L43	Coil,(LH1-682K)	6800μH		
L44	Coil,(LH1-332K)	3300μH		
L45	Coil,(LH1-682K)	6800μH		
L46	Coil,(LH1-682K)	6800μH		
L47	Coil,(LH1-332K)	3300μH		
L48	Coil,(LH1-272K)	2700μH		
L49	Coil,(LH1-272K)	2700μH		
L50	Coil,(LH1-122K)	1200μH		
L51	Not assigned			
L52	Not assigned			
L53	Not assigned			
L54	Not assigned			
L55	Not assigned			
L56	Coil,(LH1-272K)	2700μH		
L57	Coil,(LH1-272K)	2700μH		
L58	Coil,(LH1-122K)	1200μH		
L59	Coil,(LF8-561K)	560μH		
L60	Coil,(LF8-561K)	560μH		
L61	Coil,(LF8-331K)	330μH		
L62	Coil,(LF8-561K)	560μH		
L63	Coil,(LF8-561K)	560μH		
L64	Coil,(LF8-331K)	330μH		
L65	Coil,(LF8-151K)	150μH		
L66	Coil,(LF8-151K)	150μH		
L67	Coil,(LF8-820K)	82μH		
L68	Coil,(LF8-151K)	150μH		
L69	Coil,(LF8-151K)	150μH		
L70	Coil,(LF8-820K)	82μH		
L71	Coil,(LF8-820K)	82μH		
L72	Coil,(LF8-820K)	82μH		
L73	Coil,(LF8-390K)	39μH		
L74	Coil,(LF8-820K)	82μH		
L75	Coil,(LF8-820K)	82μH		
L76	Coil,(LF8-390K)	39μH		
Q 1	IC,(MC10H131L)			
Q 2	IC,(μPC251C)			
Q 3	IC,(7406)			
Q 4	Not assigned			
Q 5	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
Q 6	IC,(MC12040L)			
Q 7	IC,(μPC151C)			
Q 8	Tr,(2SC1907)			
Q 9	Tr,(2SC1826S)			
Q10	Not assigned			
Q11	IC,(MC10H101L)			
Q12	IC,(MC10H101L)			
Q13	IC,(MC10H102L)			
Q14	IC,(MC10H102L)			
Q15	IC,(MC10H102L)			
Q16	Tr,(2SC1907)			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	Tr,(2SC1907)			
Q20	Tr,(2SC1907)			
Q21	Tr,(2SC1907)			
Q22	Tr,(2SC1907)			
Q23	Tr,(2SC1907)			
Q24	Not assigned			
Q25	Not assigned			
Q26	Tr,(2SC1907)			
Q27	Tr,(2SC1907)			
Q28	IC,(HI3-201-5)			
Q29	IC,(HI3-201-5)			
Q30	IC,(HI3-201-5)			
Q31	Not assigned			
Q32	Not assigned			
Q33	Not assigned			
Q34	Not assigned			
Q35	Not assigned			
Q36	IC,(MC10H102L)			
Q37	IC,(MC10H102L)			
Q38	Not assigned			
Q39	Tr,(2SC1907)			
Q40	Tr,(2SC1907)			
Q41	Tr,(2SC1907)			
Q42	Tr,(2SC1907)			
Q43	Tr,(2SC1907)			
Q44	Tr,(2SC1907)			
Q45	Tr,(2SC1907)			
Q46	Tr,(2SC1907)			
Q47	Tr,(2SC1907)			
Q48	Tr,(2SC1907)			
Q49	Not assigned			
Q50	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
Q51	IC,(HI3-201-5)			
Q52	IC,(HI3-201-5)			
Q53	Not assigned			
Q54	IC,(μPC251C)			
Q55	Di,(1S953)			
Q56	IC,(74LS32)			
Q57	IC,(SN74ALS574N)			
Q58	IC,(74LS00)			
Q59	IC,(HD10124)			
Q60	IC,(HD10124)			
R 1	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R 2	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 3	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R 4	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 5	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R 6	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 7	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 8	MF,(RN14K2E2141D)	2.15kΩ,±0.5%,1/4W		
R 9	MF,(RN14K2E6491D)	6.49kΩ,±0.5%,1/4W		
R10	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R11	MF,(RN14K2E6491D)	6.49kΩ,±0.5%,1/4W		
R12	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R13	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R14	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R15	MF,(RN14K2D2001D)	2.0kΩ,±0.5%,1/4W		
R16	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R17	MF,(RS2FB10.0J)	10Ω,±5%,2W		
R18	CF,(ARD25T270J)	27Ω,±5%,1/4W		
R19	Single in-line array, (IHR-4-820JA)	82Ω x 4,1/8W		
R20	CF,(ARD25T270J)	27Ω,±5%,1/4W		
R21	Single in-line array, (IHR-4-820JA)	82Ω x 4,1/8W		
R22	CF,(ARD25T330J)	33Ω,±5%,1/4W		
R23	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R24	CF,(ARD25T330J)	33Ω,±5%,1/4W		
R25	Not assigned			
R26	CF,(ARD25T390J)	39Ω,±5%,1/4W		
R27	Single in-line array, (IHR-4-820JA)	82Ω x 4,1/8W		
R28	CF,(ARD25T390J)	39Ω,±5%,1/4W		
R29	Not assigned			
R30	CF,(ARD25T470J)	47Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
R31	Not assigned			
R32	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R33	Not assigned			
R34	Not assigned			
R35	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R36	Not assigned			
R37	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R38	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R39	Not assigned			
R40	CF,(ARD25T680J)	68Ω,±5%,1/4W		
R41	Not assigned			
R42	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R43	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R44	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R45	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R46	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R47	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R48	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R49	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R50	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R51	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R52	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R53	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R54	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R55	Not assigned			
R56	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R57	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R58	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R59	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R60	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R61	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R62	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R63	Not assigned			
R64	Not assigned			
R65	Not assigned			
R66	Not assigned			
R67	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R68	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R69	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R70	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R71	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R72	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R73	Not assigned			
R74	Not assigned			
R75	CF,(ARD25T220J)	22Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
R76	Single in-line array, (IHR-4-820JA)	82Ω x 4,1/8W		
R77	CF,(ARD25T220J)	22Ω,±5%,1/4W		
R78	Not assigned			
R79	CF,(ARD25T330J)	33Ω,±5%,1/4W		
R80	Not assigned			
R81	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R82	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R83	Not assigned			
R84	Not assigned			
R85	Not assigned			
R86	CF,(ARD25T330J)	33Ω,±5%,1/4W		
R87	Not assigned			
R88	CF,(ARD25T330J)	33Ω,±5%,1/4W		
R89	Single in-line array, (IHR-4-820JA)	82Ω x 4,1/8W		
R90	CF,(ARD25T330J)	33Ω,±5%,1/4W		
R91	Not assigned			
R92	CF,(ARD25T390J)	39Ω,±5%,1/4W		
R93	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R94	CF,(ARD25T390J)	39Ω,±5%,1/4W		
R95	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R96	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R97	Not assigned			
R98	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R99	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R100	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R101	Not assigned			
R102	Not assigned			
R103	Not assigned			
R104	Not assigned			
R105	Not assigned			
R106	Not assigned			
R107	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R108	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R109	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R110	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R111	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R112	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R113	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R114	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R115	Not assigned			
R116	Not assigned			
R117	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R118	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
R119	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R120	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R121	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R122	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R123	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R124	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R125	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R126	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R127	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R128	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R129	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R130	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R131	Not assigned			
R132	Not assigned			
R133	Not assigned			
R134	Not assigned			
R135	Not assigned			
R136	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R137	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R138	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R139	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R140	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R141	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R142	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R143	CF,(ARD25T561J)	560Ω,±5%,1/4W		
R144	Not assigned			
R145	Not assigned			
R146	Not assigned			
R147	Not assigned			
R148	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R149	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R150	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R151	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R152	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R153	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R154	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R155	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R156	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R157	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R158 to R170	Not assigned			
R171	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R172	Single in-line array, (IHR-8-103JA)	2.2kΩ x 8,1/8W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z9, PLL

CKT REF	DESCRIPTION	RATING		NOTE
R173	Not assigned			
R174	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R175	MF,(RN14K2E7501D)	7.5kΩ,±0.5%,1/4W		
R176	MF,(RN14K2E1071D)	1.07kΩ,±0.5%,1/4W		
R177	MF,(RN14K2E1212D)	12.1kΩ,±0.5%,1/4W		
R178	Not assigned			
R179	Not assigned			
R180 to R199	Var,MF,(RJ-6S 100Ω)	100Ω,1/2W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 2	Not assigned			
C 3	Cer,(CC45CH1H070DY)	7pF,±0.5pF,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Cer,(CC45CH1H060DY)	6pF,±0.5pF,50V		
C 7	Tant,(CS02H1A4R7M)	4.7μF,±20%,10V		
C 8	Tant,(CS02H1A4R7M)	4.7μF,±20%,10V		
C 9	Tant,(CS02H1A101M)	100μF,±20%,10V		
C10	Tant,(CS02H0J470M)	47μF,±20%,6.3V		
C11	Tant,(CS02H0J470M)	47μF,±20%,6.3V		
C12	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C13	Cer,(CC924CH1H471J)	470pF,±5%,50V		
C14	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C15	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C16	Plast,(ECQ-P1 132FZ)	1300pF,±1%,100V		
C17	Cer,(RPE111CH331G50)	330pF,±2%,50V		
C18	Cer,(RPE111CH241G50)	240pF,±2%,50V		
C19	Cer,(CC924CH1H910J)	91pF,±5%,50V		
C20	Elect,(CE04W1A101)	100μF,±20%,10V		
C21	Elect,(CE04W1E101)	100μF,±20%,25V		
C22	Elect,(CE04W1E101)	100μF,±20%,25V		
C23	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C24	Cer,(CC45CH1H070DY)	7pF,±0.5pF,50V		
C25	Not assigned			
C26	Cer,(RPE114C105M50)	1μF,±20%,50V		
C27	Cer,(CK924C1H104M)	0.1μF,±20%,50V		Q'ty 2, Parallel
C28	Cer,(CK924C1H104N)	0.1μF,±20%,50V		
C29	Plast,(ECQ-P1 202FZ)	2000pF,±1%,100V		
C30	Cer,(CK924C1H222M)	2200pF,±20%,50V		
C31	Cer,(CK924C1H223M)	0.022μF,±20%,50V		
C32	Cer,(CC45CH1H070DY)	7pF,±0.5pF,50V		
C33	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C34	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C35	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C36	Cer,(CC45CK1H0R5CY)	0.5pF,±0.25pF,50V		
C37	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CC45PH1H100DY)	10pF,±0.5pF,50V		
C40	Cer,(CC45PH1H100DY)	10pF,±0.5pF,50V		
C41	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C42	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C43	Cer,(CC924CH1H101J)	100pF,±5%,50V		
C44	Cer,(CC924CH1H470J)	47pF,±5%,50V		
C45	Cer,(CC45CH1H330JY)	33pF,±5%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CC924CH1H470J)	47pF,±5%,50V		
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C48	Cer,(CC924CH1H820J)	82pF,±5%,50V		
C49	Cer,(CC924CH1H151J)	150pF,±5%,50V		
C50	Cer,(CC924CH1H151J)	150pF,±5%,50V		
C51 to C70	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C71	Not assigned			
C72	Not assigned			
C73	Not assigned			
C74	Not assigned			
C75	Not assigned			
C76	Elect,(CE04W1A101)	100μF,±20%,10V		
J 1	Plug,(DF1-5P-2.5DS)	5P		
J 2	Plug,(DF1-5P-2.5DS)	5P		
K 1	Reed relay,(PG1C-05D)			
K 2	Reed relay,(PG1C-05D)			
K 3	Reed relay,(PG1C-05D)			
K 4	Reed relay,(PG1C-05D)			
K 5	Reed relay,(PG1C-05D)			
L 1	Coil,(LF8-100K)	10μH		
L 2	Coil,(LF8-100K)	10μH		
L 3	Coil,(LF8-100K)	10μH		
L 4	Coil,(LF8-100K)	10μH		
L 5	Coil,(LF8-100K)	10μH		
Q 1	IC,(MC10H102L)			
Q 2	Di,(1S953)			
Q 3	Di,(1S953)			
Q 4	IC,(MC10H105L)			
Q 5	IC,(MC10H131L)			
Q 6	IC,(MC10138L)			
Q 7	IC,(MC10H107L)			
Q 8	IC,(MC10H105L)			
Q 9	IC,(MC10H131L)			
Q10	IC,(MC10138L)			
Q11	Di,breakdown,(RD7.5EB)	7.0 to 7.9V,400mW		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
Q12	IC,(HA3-2525-5)			
Q13	IC,(HA3-2525-5)			
Q14	IC,(μPC151C)			
Q15	IC,(NJM5532D)			
Q16	Di,(1S953)			
Q17	Di,(1S953)			
Q18	IC,(μPC277C)			
Q19	IC,(TC4071BP)			
Q20	IC,(TC4528BP)			
Q21	IC,(HI3-201-5)			
Q22	IC,(HI3-201-5)			
Q23	Di,(1S953)			
Q24	Di,(1S953)			
Q25	IC,(HA3-2525-5)			
Q26	Not assigned			
Q27	IC,(HI3-201-5)			
Q28	IC,(HI3-201-5)			
Q29	IC,(HA3-2525-5)			
Q30	IC,(7406)			
Q31	IC,(74LS112)			
Q32	IC,(74LS191)			
Q33	IC,(74LS191)			
Q34	IC,(74LS191)			
Q35	IC,(HA17012PC)			
Q36	Di,breakdown,(1SZ52)	5.9 to 6.5V,400mW		
Q37	IC,(μPC157C)			
Q38	IC,(HA3-2525-5)			
Q39	IC,(LM360N)			
Q40	IC,(74LS86)			
Q41	IC,(74LS74A)			
Q42	IC,(74LS27)			
Q43	IC,(74LS393)			
Q44	IC,(LM360N)			
Q45	Di,(1S953)			
Q46	Di,breakdown,(RD2.7EB)	2.5 to 2.9V,400mW		
Q47	IC,(LM360N)			
Q48	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q49	Di,(1S953)			
Q50	IC,(74LS423)			
Q51	IC,(74LS14)			
Q52	Tr,(2SC1907)			
Q53	IC,(74LS02)			
Q54	IC,(74LS74A)			
Q55	IC,(74LS14)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
Q56	Not assigned			
Q57	IC,(SN74ALS574N)			
Q58	IC,(74LS138)			
Q59	IC,(74LS245)			
Q60	IC,(SN74ALS574N)			
Q61	IC,(74LS365A)			
Q62	IC,(SN74ALS574N)			
Q63	IC,(SN74ALS574N)			
Q64	IC,(SN74ALS574N)			
Q65	Not assigned			
Q66	IC,(74LS138)			
Q67	Not assigned			
Q68	Not assigned			
Q69	Not assigned			
Q70	Not assigned			
Q71	IC,(74LS04)			
Q72	Not assigned			
Q73	Not assigned			
Q74	Not assigned			
Q75	IC,(HA17012PC)			
Q76	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
Q77	IC,(μPC251C)			
Q78	Tr,(2SC1907)			
Q79	Tr,(2SC1907)			
Q80	Tr,(2SC1907)			
Q81	Tr,(2SC1907)			
R 1	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 2	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 3	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R 4	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R 5	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 8	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R 9	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R10	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R11	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R12	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R13	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R14	Not assigned			
R15	Not assigned			
R16	CF,(ARD25T131J)	130Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
R17	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R18	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R19	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R20	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R21	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R24	Not assigned			
R25	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R26	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R27	Not assigned			
R28	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R29	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R30	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R31	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R32	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R33	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R34	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R35	MF,(RN14K2D2001D)	2.0kΩ,±0.5%,1/4W		
R36	Var,MF,(RJ-6S 2kΩ)	2kΩ,1/2W		
R37	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R38	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R39	CF,(ARD25T224J)	220kΩ,±5%,1/4W		
R40	CF,(ARD25T224J)	220kΩ,±5%,1/4W		
R41	MF,(RN14K2E4221D)	4.22kΩ,±0.5%,1/4W		
R42	MF,(RN14K2E2872D)	28.7kΩ,±0.5%,1/4W		
R43	MF,(RN14K2E2872D)	28.7kΩ,±0.5%,1/4W		
R44	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R45	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R46	MF,(RN14K2E6491D)	6.49kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E5621D)	5.62kΩ,±0.5%,1/4W		
R48	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R49	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R50	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R51	CF,(ARD25T224J)	220kΩ,±5%,1/4W		
R52	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R53	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R54	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R55	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R56	CF,(ARD25T103J)	10kΩ,±5%,1/4W		Q'ty 0 or 1, *
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W		
R59	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W		
R60	MF,(RN14K2E7500D)	750Ω,±0.5%,1/4W		
R61	MF,(RN14K2E4220D)	422Ω,±0.5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
R62	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R63	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R64	Not assigned			
R65	Not assigned			
R66	MF,(RN14K2E8061D)	8.06kΩ,±0.5%,1/4W		
R67	MF,(RN14K2E3401D)	3.4kΩ,±0.5%,1/4W		
R68	CF,(ARD25T474J)	470kΩ,±5%,1/4W		
R69	MF,(RN14K2E8061D)	8.06kΩ,±0.5%,1/4W		
R70	MF,(RN14K2E8061D)	8.06kΩ,±0.5%,1/4W		
R71	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R72	MF,(RN14K2E2491D)	2.49kΩ,±0.5%,1/4W		
R73	Var,MF,(RJ-6S 20kΩ)	20kΩ,1/2W		
R74	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R75	MF,(RN14K2E3321D)	3.32kΩ,±0.5%,1/4W		
R76	MF,(RN14K2E3160D)	316Ω,±0.5%,1/4W		
R77	MF,(RN14K2E6490D)	649Ω,±0.5%,1/4W		
R78	Var,MF,(RJ-6S 1kΩ)	1kΩ,1/2W		
R79	MF,(RN14K2E4021D)	4.02kΩ,±0.5%,1/4W		
R80	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R81	MF,(RN14K2E4990D)	499Ω,±0.5%,1/4W		
R82	MF,(RN14K2E4990D)	499Ω,±0.5%,1/4W		
R83	MF,(RN14K2E2000D)	200Ω,±0.5%,1/4W		
R84	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R85	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R86	MF,(RN14K2E5111D)	5.11kΩ,±0.5%,1/4W		
R87	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R88	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R89	MF,(RN14K2E2000D)	200Ω,±0.5%,1/4W		
R90	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R91	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R92	MF,(RN14K2E5111D)	5.11kΩ,±0.5%,1/4W		
R93	MF,(RN14K2E3240D)	324Ω,±0.5%,1/4W		
R94	Not assigned			
R95	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R96	Not assigned			
R97	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R98	Single inpline array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R99	MF,(RN14K2E6490D)	649Ω,±0.5%,1/4W		
R100	Var,MF,(RJ-6S 1kΩ)	1kΩ,1/2W		
R101	MF,(RN14K2E4021D)	4.02kΩ,±0.5%,1/4W		
R102	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R103	MF,(RN14K2E4990D)	499Ω,±0.5%,1/4W		
R104	MF,(RN14K2E4990D)	499Ω,±0.5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z10, JITTER

CKT REF	DESCRIPTION	RATING		NOTE
R105	MF,(RN14K2E2001D)	2.0kΩ,±0.5%,1/4W		
R106	MF,(RN14K2E2001D)	2.0kΩ,±0.5%,1/4W		
R107	MF,(RN14K2E1001D)	1.0kΩ,±0.5%,1/4W		
R108	Not assigned			
R109	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R110	Not assigned			
R111	Single in-line array, (IHR-6-102JA)	1kΩ x 6,1/8W		
R112	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R113	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R114	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R115	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R116	Single in-line array, (IHR-6-222JA)	2.2kΩ x 6,1/8W		
R117	Not assigned			
R118	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R119	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R120	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R121	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R122	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R123	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R124	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R125	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R126	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R127	Single in-line array, (IHR-4-222JA)	2.2kΩ x 4,1/8W		
R128	Not assigned			
R129	CF,(ARD25T474J)	470kΩ,±5%,1/4W		
R130	CF,(ARD25T224J)	220kΩ,±5%,1/4W		
R131	CF,(ARD25T474J)	470kΩ,±5%,1/4W		
R132	CF,(ARD25T105J)	1MΩ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z11, COUNTER

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E101)	100μF,±20%,25V		
C 2	Elect,(CE04W1E101)	100μF,±20%,25V		
C 3 to C19	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C20	Not assigned			
C21 to C31	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C32	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C33	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C34	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C35	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C36	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C37	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CC924CH1H101J)	100pF,±5%,50V		
Q 1	Not assigned			
Q 2	Di,(1S953)			
Q 3	Di,(1S953)			
Q 4	Not assigned			
Q 5	Not assigned			
Q 6	Not assigned			
Q 7	Not assigned			
Q 8	Not assigned			
Q 9	Not assigned			
Q10	IC,(74LS32)			
Q11	Not assigned			
Q12	IC,(74LS138)			
Q13	IC,(SN74ALS574N)			
Q14	IC,(74LS541)			
Q15	IC,(74LS541)			
Q16	IC,(74LS541)			
Q17	IC,(74LS138)			
Q18	IC,(74LS08)			
Q19	IC,(74LS00)			
Q20	IC,(74LS245)			
Q21	IC,(74LS541)			
Q22	IC,(74LS541)			
Q23	IC,(74LS08)			
Q24	IC,(74LS32)			
Q25	IC,(74LS197)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z11, COUNTER

CKT REF	DESCRIPTION	RATING		NOTE
Q26	IC,(μPD8253C-2)			
Q27	IC,(74LS197)			
Q28	IC,(74LS74A)			
Q29	IC,(74LS123)			
Q30	IC,(72LS00)			
Q31	Not assigned			
Q32	IC,(MC10H102L)			
Q33	IC,(74LS04)			
Q34	IC,(MC10H102L)			
Q35	IC,(HD10231)			
Q36	IC,(HD10231)			
Q37	IC,(HD10231)			
Q38	IC,(HD10231)			
Q39	IC,(HD10125)			
Q40	IC,(74197)			
Q41	IC,(74197)			
Q42	IC,(74LS197)			
Q43	IC,(μPD8253C-2)			
Q44	IC,(74LS541)			
Q45	IC,(SN74ALS574N)			
Q46	IC,(HD10124)			
Q47	IC,(74LS197)			
Q48	IC,(HD10125)			
Q49	IC,(74LS196)			
Q50	IC,(HD10105)			
Q51	IC,(HD10124)			
Q52	IC,(MC10216)			
Q53	IC,(HD10231)			
Q54	IC,(HD10125)			
Q55	IC,(74LS32)			
Q56	IC,(74LS04)			
Q57	IC,(74LS74A)			
Q58	IC,(MC10H102L)			
Q59	IC,(MC10H102L)			
Q60	IC,(HD10125)			
Q61	IC,(MC10H131L)			
Q62	IC,(HD10105)			
Q63	IC,(HD10124)			
Q64	IC,(74197)			
Q65	IC,(74LS197)			
Q66	IC,(74LS197)			
Q67	IC,(μPD8253C-2)			
Q68	IC,(74LS197)			
Q69	IC,(74LS32)			
Q70	IC,(74LS32)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z11, COUNTER

CKT REF	DESCRIPTION	RATING		NOTE
Q71	IC,(74LS74A)			
Q72	IC,(74LS123)			
R 1	CF,(ARD25T332J)	3.3k ,±5%,1 4W		
R 2	CF,(ARD25T332J)	3.3k ,±5%,1 4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T332J)	3.3k ,±5%,1/4W		
R 5	Not assigned			
R 6	Not assigned			
R 7	Not assigned			
R 8	Not assigned			
R 9	Not assigned			
R10	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R11	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R12	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R13	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R14	Not assigned			
R15	Not assigned			
R16	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R17	Not assigned			
R18	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R19	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R20	Not assigned			
R21	Not assigned			
R22	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R23	Not assigned			
R24	Not assigned			
R25	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R26	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R27	Not assigned			
R28	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R29	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R30	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R31	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R32	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R33	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R34	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R35	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R36	Not assigned			
R37	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R38	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R39	Not assigned			
R40	CF,(ARD25T681J)	680Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z11, COUNTER

CKT REF	DESCRIPTION	RATING		NOTE
R41	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R42	Not assigned			
R43	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R44	CF,(ARD25T681J)	680Ω,±5%,1/4W		
P45	Not assigned			
R46	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R47	Not assigned			
R48	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R52	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R53	Not assigned			
R54	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R55	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R56	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R57	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R58	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R59	Not assigned			
R60	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R61	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R62	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R63	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R64	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R65	Not assigned			
R66	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
P67	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R68	Not assigned			
R69	Not assigned			
R70	Not assigned			
R71	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R72	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R73	Not assigned			
R74	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R75	CF,(ARD25T391J)	390 ,±5%,1/4W		
R76	CF,(ARD25T391J)	390 ,±5%,1 4W		
R77	CF,(ARD25T391J)	390 ,±5%,1/4W		
R78	Not assigned			
R79	Not assigned			
R80	Not assigned			
R81	Not assigned			
R82	CF,(ARD25T681J)	680 ,±5%,1/4W		
R83	CF,(ARD25T681J)	680 ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z11, COUNTER

CKT REF	DESCRIPTION	RATING		NOTE
R84	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R85	Not assigned			
R86	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R87	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R88	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R89	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R90	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R91	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R92	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R93	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R94	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R95	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R96	Not assigned			
R97	Not assigned			
R98	Not assigned			
R99	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R100	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R101	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R102	Single in-line array, (IHR-4-681JA)	680Ω x 4,1/8W		
R103	CF,(ARD25T681J)	680Ω,±5%,1/4W		
R104	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R105	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R106	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R107	CF,(ARD25T333J)	33kΩ,±5%,1/4W		
R108	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R109	CF,(ARD25T391J)	390Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z12, CPU

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1C100)	10μF,±20%,16V		
C 2	Elect,(CE04W1V100)	10μF,±20%,35V		
C 3	Tant,(CS02H1C220M)	22μF,±20%,16V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 7	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 8	Elect,(CE04C1A221A)	220μF,±20%,10V		
C 9	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C10	Cer,(CC924CH1H330J)	33pF,±5%,50V		
C11	Cer,(CC924CH1H300J)	30pF,±5%,50V		
C12	Tant,(CS02H1D2R2M)	2.2μF,±20%,20V		
C13	Elect,(CE02W1V221)	220μF,±20%,35V		
C14	Elect,(CE02W1A102)	1000μF,±20%,10V		
C15 to C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Plug, (HIF3-26P-2.54DS)	26P		
J 2	Plug, (HIF3-20P-2.54DS)	20P		
Q 1	IC,(LH0080A)			
Q 2	IC,(74LS138)			
Q 3	IC,(74LS21)			
Q 4	IC,(TC4001BP)			
Q 5	IC,(HN27256G-25)			
Q 6	IC,(HN27256G-25)			
Q 7	IC,(HM6264LP-15)			
Q 8	IC,(74LS32)			
Q 9	IC,(74LS32)			
Q10	IC,(74LS08)			
Q11	IC,(74LS10)			
Q12	IC,(7432)			
Q13	IC,(7404)			
Q14	Di,breakdown,(RD2.0EB)	1.88 to 2.12V,400mW		
Q15	Di,(1S953)			
Q16	IC,(TL7705CP-B)			
Q17	IC,(μPC271C)			
Q18	IC,(TC4013BP)			
Q19	IC,(μPD8253C-2)			
Q20	IC,(μPD8259C-2)			

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( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z12, CPU

CKT REF	DESCRIPTION	RATING		NOTE
Q21	Di,(1S953)			
Q22	Di,(1S953)			
Q23	Di,(1S953)			
Q24	IC,(RP5C15)			
Q25	Not assigned			
Q26	IC,(74LS138)			
Q27	IC,(74LS138)			
Q28	Not assigned			
Q29	IC,(74LS30)			
Q30	IC,(74LS139)			
Q31	IC,(74LS541)			
Q32	IC,(74LS245)			
Q33	Not assigned			
Q34	IC,(D8397Z4)			
Q35	IC,(74LS74A)			
Q36	IC,(74LS74A)			
Q37	IC,(74LS138)			
Q38	IC,(SN74ALS574N)			
Q39	IC,(74LS32)			
Q40	IC,(74LS04)			
Q41	IC,(74LS541)			
Q42	IC,(74LS541)			
Q43	IC,(74LS541)			
Q44	IC,(74LS20)			
R 1	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R 2	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R 3	Single in-line array, (IHR-8-332JA)	3.3kΩ x 8,1/8W		
R 4	Not assigned			
R 5	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R 6	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R 7	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R 8	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 9	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R10	CF,(ARD25T821J)	820Ω,±5%,1/4W		
R11	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R12	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R13	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R14	CF,(ARD25T102J)	1kΩ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z12, CPU

CKT REF	DESCRIPTION	RATING		NOTE
R15	MF,(RN14K2E3651D)	3.65kΩ,±0.5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	CF,(ARD25T562J)	5.6kΩ,±5%,1/4W		
R18	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R19	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R20	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R21	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R22	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R23	Not assigned			
R24	CF,(ARD25T562J)	5.6kΩ,±5%,1/4W		
R25	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R26	Not assigned			
R27	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R28	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R29	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R30	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
S 1	Dip switch,(DIP-A(4))			
S 2	Dip switch,(DIP-A(8))			
S 3	Dip switch,(DIP-A(8))			
X 1	XTAL OSC, (TQC-101A-7C)	32.768kHz		
Z 1	XTAL OSC,(TCO-706A)	4.096MHz		
Z 2	LITHIUM CELL,(S4Y10072B)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z14, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1V471)	470μF,±20%,35V		
C 2	Elect,(CE04W1V471)	470μF,±20%,35V		
C 3	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 7	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Cable, (HIF23A-40D-AA60S)			
J 2	Cable, (HIF23A-26D-AA40S)			
J 3	Not assigned			
J 4	Not assigned			
J 5	Not assigned			
J 6	Receptacle,(BNC-R-NI)			
J 7	Receptacle,(27CP-R-PC)			
J 8	Receptacle,(BNC-R-NI)			
J 9	Receptacle,(27CP-R-PC)			
J10	Receptacle,(BNC-R-NI)			
J11	Receptacle, (MP2.5CR-PC)			
J12	Receptacle,(BNC-R-NI)			
J13	Receptacle,(27CP-R-PC)			
Q 1	LED,(LN513GKM)			
Q 2	LED,(LN513GKM)			
Q 3	LED,(LN513GKM)			
Q 4	LED,(LN513GKM)			
Q 5	LED,(LN513GKM)			
Q 6	LED,(LN513GKM)			
Q 7	LED,(TLY211)			
Q 8	LED,(TLY211)			
Q 9	LED,(TLY211)			
Q10	LED,(TLY211)			
Q11	LED,(TLY211)			
Q12	Not assigned			
Q13	Not assigned			
Q14	LED,(TLY211)			
Q15	LED,(TLY211)			
Q16	LED,(TLY211)			
Q17	LED,(TLY211)			
Q18	LED,(SR615D)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-214, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
Q19	Not assigned			
Q20	Not assigned			
Q21	Not assigned			
Q22	LED,(LN514GK)			
Q23	LED,(LN514GK)			
Q24	LED,(LN514GK)			
Q25	LED,(LN514GK)			
Q26	LED,(LN514GK)			
Q27	LED,(LN514GK)			
Q28 to Q40	LED,(TLG226)			
Q41	LED,(TLG401)			
Q42	Not assigned			
Q43	Not assigned			
Q44	Not assigned			
Q45	Not assigned			
Q46	LED,(TLG226)			
Q47	LED,(TLG226)			
Q48	LED,(TLG226)			
Q49	LED,(TLG226)			
Q50	LED,(TLG226)			
Q51	LED,(TLG226)			
Q52	LED,(LN514GK)			
Q53	LED,(LN514GK)			
Q54	LED,(LN514GK)			
Q55	LED,(LN514GK)			
Q56	LED,(LN514GK)			
Q57	LED,(LN514GK)			
Q58 to Q72	LED,(TLG226)			
Q73	Not assigned			
Q74	LED,(TLG226)			
Q75	LED,(TLG226)			
Q76	LED,(TLG226)			
Q77	LED,(TLG226)			
Q78	LED,(TLG226)			
Q79	Not assigned			
Q80	LED,(TLG226)			
Q81	LED,(TLG226)			
Q82	LED,(TLG226)			
Q83	LED,(TLG226)			
Q84	LED,(TLG226)			
Q85	LED,(TLG226)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-214, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
Q86	LED,(TLG226)			
Q87	LED,(TLG226)			
Q88	LED,(LN513GKM)			
Q89	LED,(LN513GKM)			
Q90	LED,(LN513GKM)			
Q91 to Q122	LED,(LN342GPH)			
Q123 to Q139	LED,(TLG226)			
Q140	IC,(M54563P)			
Q141	IC,(74F537)			
Q142	IC,(74F537)			
Q143	IC,(M54523P)			
Q144	IC,(M54523P)			
Q145	IC,(74145)			
Q146	Not assigned			
Q147	Not assigned			
Q148	IC,(M54563P)			
Q149	IC,(74F537)			
Q150	IC,(74F537)			
Q151	IC,(M54523P)			
Q152	IC,(M54523P)			
Q153	IC,(M54523P)			
Q154	IC,(M54563P)			
Q155	IC,(74F537)			
Q156	IC,(M54523P)			
R 1	Var,MF, (RG161N20SB10kΩM)	10kΩ,±20%,1/2W		
R 2	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 3	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 4	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 5	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 6	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 7	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 8	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 9	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R 10	Not assigned			
R 11	Not assigned			
R 12	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 13	Dual in-line array, (AHR-151JB)	150Ω,±5%,1/8W		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : R-214, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
R14	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R15	Not assigned			
R16	Not assigned			
R17	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R18	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R19	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R20	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R21	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R22	Not assigned			
R23	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R24	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R25	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R26	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R27	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R28	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
P29	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R30	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R31	Not assigned			
R32	Not assigned			
R33	Dual in-line array, (AHR-151JB)	150Ω,±5%,1/8W		
R34	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R35	Not assigned			
R36	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R37	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R38	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R39	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R40	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R41	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R42	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R43	MF,(RS1FB150ΩJ)	150Ω,±5%,1W		
R44	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R45	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
S 1	Key switch,(KEG10901)			
S 2	Key switch,(KEG10901)			
S 3	Key switch,(HL20-NS)			
S 4	Key switch,(HL20-NS)			
S 5	Key switch,(HL20-NS)			
S 6	Key switch,(HL20-NS)			
S 7	Key switch,(HL20-NS)			
S 8	Key switch,(HL20-NS)			
S 9	Key switch,(KEG10901)			
S10	Key switch,(KEG10901)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-214, DISPLAY

CKT REF	DESCRIPTION	RATING		NOTE
S11	Key switch,(KEG10901)			
S12	Key switch,(KEG10901)			
S13	Key switch,(KEG10901)			
S14	Key switch,(KEG10901)			
S15	Key switch,(HL20-NS)			
S16	Key switch,(HL20-NS)			
S17	Key switch,(HL20-NS)			
S18	Key switch,(HL20-NS)			
S19	Key switch,(KEG10901)			
S20	Key switch,(KEG10901)			
S21	Key switch,(KEG10901)			
S22	Key switch,(KEG10901)			
S23	Key switch,(KEG10901)			
S24	Key switch,(KEG10901)			
S25	Key switch,(KEG10901)			
S26	Key switch,(HL20-LSYG)			
S27	Key switch,(KEG10901)			
S28	Key switch,(KEG10901)			
S29	Key switch,(KEG10901)			
S30	Key switch,(KEG10901)			
S31	Key switch,(KEG10901)			
S32	Key switch,(HL20-NS)			
S33	Key switch,(HL20-NS)			
S34	Key switch,(HL20-NS)			
S35	Key switch,(HL20-NS)			
S36	Key switch,(KEG10901)			
S37	Key switch,(KEG10901)			
S38	Key switch,(KEG10901)			
S39	Key switch,(KEG10901)			
S40	Key switch,(KEG10901)			
S41	Key switch,(KEG10901)			
S42	Key switch,(HL20-NS)			
S43	Key switch,(HL20-NS)			
S44	Key switch,(HL20-NS)			
S45	Key switch,(HL20-NS)			
S46	Key switch,(KEG10901)			
S47	Key switch,(HL20-LSYG)			
S48	Key switch,(KEG10901)			
S49	Key switch,(KEG10901)			
S50	Key switch,(KEG10901)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z15, GP-IB

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 2	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 3	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 4	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 5	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 6	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Cable, (CNF23-260-AA40S)			
J 2	Jack, (57-20240-8D35)			
Q 1	IC,(74LS245)			
Q 2	Not assigned			
Q 3	IC,(74LS32)			
Q 4	IC,(μPD7210C)			
Q 5	IC,(SN75160BN)			
Q 6	IC,(SN75162BN)			
Q 7	IC,(74LS00)			
Q 8	IC,(74LS540)			
Q 9	IC,(74LS540)			
Q10	IC,(74LS540)			
Q11	IC,(SN74ALS574N)			
Q12	IC,(M54563P)			
Q13	Not assigned			
Q14	LED,(TLG226)			
Q15	LED,(TLG226)			
Q16	LED,(TLG226)			
Q17	LED,(TLG226)			
Q18	LED,(TLG226)			
Q19	LED,(TLG226)			
Q20	LED,(TLG226)			
Q21	IC,(74LS08)			
Q22	IC,(74LS138)			
Q23	IC,(SN74ALS574N)			
Q24	IC,(M54563P)			
Q25	IC,(TLG226)			
Q26	IC,(TLG226)			
Q27	IC,(TLG226)			
Q28	IC,(TLG226)			
Q29	IC,(TLG226)			
Q30	IC,(TLG226)			
Q31	IC,(TLG226)			
Q32	IC,(TLG226)			

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( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z15, GP-IB

CKT REF	DESCRIPTION	RATING		NOTE
R 1	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 2	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 3	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R 4	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R 5	Single in-line array, (IHR-8-103JA)	10kΩ x 8,1/8W		
R 6	Not assigned			
R 7	Not assigned			
R 8 to R22	CF,(ARD25T * J)	330 to 820Ω,±5%,1/4W		•
S 1	Dip switch,(DIP-A(6))			
S 2	Dip switch,(DIP-A(8))			
S 3	Dip switch,(DIP-A(8))			

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z16, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04C1J4R7)	4.7μF,±20%,63V		
C 2	Elect,(KM200VNSN680J0F)	680μF,±20%,200V		
C 3	M Plast,(1MFT-P225J)	2.2μF,±5%,100V		
C 4	Elect,(KM200VNSN68030F)	680μF,±20%,200V		
C 5	Elect,(CE04C1J100)	10μF,±20%,63V		
C 6	Not assigned			
C 7	Not assigned			
C 8	Elect,(CE04C1E221)	220μF,±20%,25V		
C 9	Elect,(CE04C1J100)	10μF,±20%,63V		
C10	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C11	Elect,(CE04C1A470)	47μF,±20%,10V		
C12	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C13	Not assigned			
C14	Not assigned			
C15	Elect,(CE04W1J1R0)	1μF,±20%,63V		
C16	Not assigned			
C17	Plast,(ECQ-E2A474MW)	0.47μF,±20%,250V		
C18	Cer,(DE7120F332MVA1)	3300pF,±20%,400V		
C19	Not assigned			
C20	Elect,(KM10VNSN470022B)	4700uF,±20%,10V		
C21	Elect,(CE04C1A471)	470μF,±20%,10V		
C22	Elect,(KM10VNSN680022B)	6800μF,±20%,10V		
C23	Elect,(CE04C1A471)	470μF,±20%,10V		
C24	Elect,(CE04C1E221)	220μF,±20%,25V		
C25	Not assigned			
C26	Elect,(CE04C1E221)	220μF,±20%,25V		
C27	Not assigned			
C28	Elect,(CE04C1E221)	220μF,±20%,25V		
C29	Elect,(CE04W1V471)	470μF,±20%,35V		
C30	Cer,(CC924CH1H102J)	1000pF,±5%,50V		Q'ty 2
C31	Elect,(CE04C1E220)	22μF,±20%,25V		
C32	Cer,(RPE111CH681G50)	680pF,±2%,50V		
C33	Cer,(RPE111CH681G50)	680pF,±2%,50V		
C34	Plast,(ECQ-V1H473JW)	0.047μF,±5%,50V		
C35	Plast,(ECQ-V1H473JW)	0.047μF,±5%,50V		
C36	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C37	Not assigned			
C38	Cer,(CK924C1H222M)	2200pF,±20%,50V		
C39	M Plast, (CF922N2E104K)	0.1μF,±10%,250V		

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z16, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
F 1	Fuse,(MF51NN250V8ADC01)	250V,8A		
F 2	Fuse,(MF51NN250V8ADC01)	250V,8A		
F 3	Fuse,(MF51NN250V8ADC01)	250V,8A		
F 4	Fuse,(MF51NN250V1ADC01)	250V,1A		
F 5	Fuse,(MF51NN250V1ADC01)	250V,1A		
F 6	Fuse,(SF109U)	125V-5A-15A		
F 7	Fuse,(MF51NN250V2ADC01)	250V,2A		
J 1	Not assigned			
J 2	Plug,(1490P)	4P		
J 3	Jack, (DF1-8S-2.5R24)			
J 4	Plug, (DF1-8P-2.5DS)	8P		
L 1	Coil,(SN-10-500)	110μH,3A		
L 2	Coil,(SN-10-500)	110μH,3A		
L 3	Coil,(LH3-222K)	2200μH		
L 4	Coil,(SKL-202)	50μH,10A		
L 5	Coil,(SC-10-015)	145μH,10A		
L 6	Coil,(SKL-301)	30μH,15A		
L 7	Coil,(SC-15-018)	180μH,15A		
L 8	Coil,(LH5-102K)	1000μH		
L 9	Coil,(LH5-102K)	1000μH		
L10	Coil,(LH5-102K)	1000μH		
L11	Coil,(SKU-055-B9)	4mH,1A		
Q 1	Rectifier,(V19E)			
Q 2	Di,breakdown,(RD100EB)	94 to 106V,400mW		
Q 3	Di,breakdown,(RD100EB)	94 to 106V,400mW		
Q 4	IC,(AC08EGML)			
Q 5	IC,(AC08EGML)			
Q 6	Di,(1S955)			
Q 7	Rectifier,(S5VB60)			
Q 8	Tr,(2SD798)			
Q 9	Rectifier,(V19E)			
Q10	Di,breakdown,(RD11EB)	10.4 to 11.6V,400mW		
Q11	Di,breakdown,(RD2.7EB)	2.5 to 2.9V,400mW		
Q12	IC,(_PC277C)			
Q13	Tr,(2SA816)			
Q14	Not assigned			
Q15	Di,(1S955)			

( ): Manufacturer's part number
• : Selected at factory

Parts List : R-Z16, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
Q16	Di,(1S955)			
Q17	Rectifier,(V19E)			
Q18	Rectifier,(V19E)			
Q19	Rectifier,(V19E)			
Q20	Rectifier,(V19E)			
Q21	Tr,(2SC3164)			
Q22	Rectifier,(V19E)			
Q23	Rectifier,(V19E)			
Q24	Rectifier,(V19E)			
Q25	Rectifier,(V19E)			
Q26	Tr,(2SC3164)			
Q27	Not assigned			
Q28	Not assigned			
Q29	Rectifier,(U19C)			
Q30	Rectifier,(U19C)			
Q31	Rectifier,(U19C)			
Q32	Not assigned			
Q33	Tr,(2SA1154)			
Q34	IC,(μPC494C)			
Q35	IC,(PC-618)			
Q36	Tr,(2SC2718)			
Q37	IC,(μPC803C)			
Q38	Di,breakdown,(RD11EB)	10.4 to 11.6V,400mW		
Q39	Di,breakdown,(RD6.2EB)	5.8 to 6.6V,400mW		
Q40	Rectifier,(SJ0SC4M)			
Q41	Rectifier,(S25SC6M)			
Q42	Rectifier,(S25SC6M)			
Q43	Rectifier,(S25SC6M)			
Q44	Rectifier,(S5KC20HR)			
Q45	Not assigned			
Q46	Tr,(2SC2721)			
Q47	Tr,(2SC2721)			
Q48	Not assigned			
Q49	Not assigned			
Q50	Rectifier,(U19C)			
Q51	Rectifier,(U19C)			
Q52	Rectifier,(U19C)			
Q53	Rectifier,(U19C)			
Q54	IC,(HCPL-3700)			
R 1	WW,(ERF-5SK100)	10Ω,±10%,5W		
R 2	MF,(RN14K2H102J)	1kΩ,±5%,1/2W		
R 3	CF,(ARD25T150J)	15Ω,±5%,1/4W		
R 4	MF,(RS1FB100kJ)	100kΩ,±5%,1W		
R 5	MF,(RN14K2H104J)	100kΩ,±5%,1/2W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z16, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
R 6	MF,(ECQ-2CJ102)	1kΩ,±5%,2W		
R 7	CF,(ARD25T333J)	33kΩ,±5%,1/4W		
R 8	MF,(RS1FB33kJ)	33kΩ,±5%,1W		
R 9	Not assigned			
R10	MF,(RS1FB10ΩJ)	10Ω,±5%,1W		
R11	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R12	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R13	MF,(RS1FB10ΩJ)	10Ω,±5%,1/4W		
R14	CF,(ARD25T470J)	47Ω,±5%,1/4W		
R15	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R16	Not assigned			
R17	MF,(RN14K2H104J)	100kΩ,±5%,1/2W		
R18	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R19	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R20	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R21	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
P22	CF,(ARD25T153J)	15kΩ,±5%,1/4W		
R23	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R24	MF,(RN14K2E1822D)	18.2kΩ,±0.5%,1/4W		
R25	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R26	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R27	Not assigned			
R28	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R29	Not assigned			
R30	CF,(ARD25T821J)	820Ω,±5%,1/4W		
R31	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R32	CF,(ARD25T183J)	18kΩ,±5%,1/4W		
R33	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R34	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
P35	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R36	Var,MF,(RJ-6S 2kΩ)	2kΩ,1/2W		
R37	MF,(RN14K2E1002D)	10kΩ,±0.5%,1/4W		
R38	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R39	MF,(RN14K2E1002D)	10.0kΩ,±0.5%,1/4W		
R40	CF,(RPD25T4R7J)	4.7Ω,±5%,1/4W		
P41	CF,(ARD25T4R7J)	4.7Ω,±5%,1/4W		
R42	MF,(RS1FB10Ω)	10Ω,±5%,1W		
P43	MF,(RS1FB10Ω)	10Ω,±5%,1W		
R44	CF,(ARD25T4R7J)	4.7Ω,±5%,1/4W		
R15	Not assigned			
P46	Not assigned			
R47	Not assigned			
R48	Not assigned			
R49	CF,(ARD25T621J)	620Ω,±5%,1/4W		
R50	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z16, POWER SUPPLY

CKT REF	DESCRIPTION	RATING		NOTE
R51	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R52	Not assigned			
R53	WW,(ERF-2SKR20)	0.2Ω,±10%,2W		
R54	WW,(ERF-2SKR20)	0.2Ω,±10%,2W		
R55	MF,(RS2FB470ΩJ)	47Ω,±5%,2W		
R56	CF,(ARD25T105J)	1MΩ,±5%,1/4W		
R57	CF,(ARD25T153J)	15kΩ,±5%,1/4W		
R58	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R59	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R60	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R61	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R62	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R63	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R64	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R65	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R66	CF,(ARD25T471J)	470Ω,±5%,1/4W		
S 1	ESD-3994S			
T 1	Driver trans, (C4T020603)			
T 2	Driver trans, (C4T020603)			
T 3	Power trans, (44T46078)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z17, MOTHERBOARD

CKT REF	DESCRIPTION	RATING		NOTE
A 1	Buzzer,(CMB-06)			
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 3	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 4	Cer,(CC45CH1H060DY)	6pF,±0.5pF,50V		
C 5	Not assigned			
C 6	Not assigned			
C 7	Not assigned			
C 8	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C 9	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C10	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C11	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Not assigned			
J 2	Not assigned			
J 3	Not assigned			
J 4	Jack, (225J-23621-587)	72P		
J 5	Jack, (225J-23621-587)	72P		
J 6	Jack, (225J-23621-587)	72P		
J 7	Jack, (225J-23621-587)	72P		
J 8	Jack, (225J-23621-587)	72P		
J 9	Jack, (225J-23621-587)	72P		
J10	Jack, (225J-23621-587)	72P		
J11	Jack, (225J-23621-587)	72P		
J12	Jack, (225J-23621-587)	72P		
J13	Not assigned			
J14	Jack, (225J-23621-587)	72P		
J15	Not assigned			
J16	Plug,(DF1-3P-2.5DS)	3P		
J17	Plug,(DF1-3P-2.5DS)	3P		
J18	Plug,(DF1-2P-2.5DS)	2P		
J19	Plug,(DF1-2P-2.5DS)	2P		
J20	Plug,(DF1-2P-2.5DS)	2P		
J21	Not assigned			
J22	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z17, MOTHERBOARD

CKT REF	DESCRIPTION	RATING		NOTE
J23	Not assigned			
J24	Jack, (225J-21521-587)	30P		
J25	Jack, (225J-21521-587)	30P		
J26	Jack, (225J-21521-587)	30P		
J27	Jack, (225J-21521-587)	30P		
J28	Jack, (225J-21521-587)	30P		
J29	Jack, (225J-21521-587)	30P		
J30	Jack, (225J-21521-587)	30P		
J31	Jack, (225J-21521-587)	30P		
J32	Jack, (225J-21521-587)	30P		
J33	Not assigned			
J34	Not assigned			
J35	Not assigned			
J36	Receptacle,(BNC-R-NI)			
J37	Receptacle,(BNC-R-NI)			
J38	Receptacle,(BNC-R-NI)			
J39	Receptacle,(BNC-R-NI)			
J40	Receptacle,(BNC-R-NI)			
J41	Receptacle,(BNC-R-NI)			
J42	Receptacle,(BNC-R-NI)			
J43	Receptacle,(BNC-R-NI)			
J44	Not assigned			
J45	Plug, (HIF3-40P-2.54DSA)	40P		
J46	Plug, (HIF3-26P-2.54DS)	26P		
J47	Jack, (DF1-5S-2.5R24)			
J48	Receptacle,(BNC-R-NI)			
J49	Receptacle,(BNC-R-NI)			
J50	Plug, (DF1-2P-2.5DS)	2P		
J51	Plug, (DF1-2P-2.5DS)	2P		
Q 1	IC,(74LS138)			
Q 2	IC,(74LS32)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z17, MOTHERBOARD

CKT REF	DESCRIPTION	RATING		NOTE
Q 3	IC,(SN74ALS574N)			
Q 4	IC,(SN74ALS574N)			
Q 5	IC,(TD62103P)			
Q 6	IC,(TD62103P)			
Q 7	IC,(μPD8279C-2)			
Q 8	IC,(μPD8279C-2)			
Q 9	IC,(μPD8279C-2)			
Q10	IC,(74LS04)			
Q11	Not assigned			
Q12	Not assigned			
Q13	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
Q14	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
Q15	Not assigned			
Q16	IC,(SN74ALS574N)			
Q17	IC,(DAC0806LCN)			
Q18	IC,(μPC151C)			
Q19	Di,breakdown,(RD9.1EB)	8.5 to 9.6V,400mW		
Q20	Di,breakdown,(1SZ52)	5.9 to 6.5V,250mW		
R 1	CF,(ARD25T332J)	3.3kΩ,+5%,1/4W		
R 2	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 3	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 4	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 5	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 6	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 7	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 8	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R 9	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R10	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R11	CF,(ARD25T331J)	330Ω,±5%,1/4W		
R12	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R13	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R14	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R15	MF,(RN14K2E3161D)	3.16kΩ,±0.5%,1/4W		
R16	MF,(RN14K2E2001D)	2.0kΩ,±0.5%,1/4W		
R17	Var,MF,(RJ-6P 2kΩ)	2kΩ,1/2W		
R18	CF,(ARD25T751J)	750Ω,±5%,1/4W		
R19	MF,(RN14K2E4991D)	4.99kΩ,±0.5%,1/4W		
R20	MF,(RN14K2E4991D)	4.99kΩ,±0.5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z18, PRINTER UNIT

CKT REF	DESCRIPTION	RATING		NOTE
J 1	Connector, (DF1-5S-2.5R24)	5P		
J 2	Connector, (DF1-5S-2.5R24)	5P		
Z 1	PRINTER INTERFACE			
Z 2	PRINTER CONTROL			
Z 3	PRINTER, (FTP-020M008)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z18-Z1, PRINTER INTERFACE

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1A471)	470μF,±20%,10V		
C 2	Elect,(CE04W1A471)	470μF,±20%,10V		
C 3	Elect,(CE04W1V101)	100μF,±20%,35V		
C 4	Cer,(CC924CH1H * J)	12 to 33pF,±5%,50V		*
C 5	Not assigned			
C 6	Not assigned			
C 7	Not assigned			
C 8	Cer,(CC924CH1H471J)	470pF,±20%,50V		
C 9	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C10	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C11	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C12	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C13	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C14	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C15	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C16	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C17	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C18	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C19	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C20	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C21	Cer,(CC924CH1H * J)	12 to 33pF,±5%,50V		*
C22	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C23	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C24	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C25	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C26	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C27	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Connector, (HIF3-20P-2.54DS)	20P		
J 2	Connector, (FCN364J032)	32P		
J 3	Connector, (DF1-5P-2.5DSA)	5P		
L 1	Coil,(LF8-101K)	100μH		
Q 1	IC,(SN74ALS574AN)			
Q 2	IC,(74LS540)			
Q 3	IC,(74LS74A)			
Q 4	Not assigned			
Q 5	IC,(μPD8748DH)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : R-Z18-Z1, PRINTER INTERFACE

CKT REF	DESCRIPTION	RATING		NOTE
C 6	IC,(MBM2732A-35)			
Q 7	IC,(74LS541)			
Q 8	IC,(μPD82C43C)			
Q 9	IC,(SN74ALS574AN)			
Q10	IC,(M54563P)			
Q11	IC,(M54563P)			
Q12	IC,(μPC277C)			
Q13	IC,(AM25LS2537PC)			
Q14	Tr,(2SC1907)			
Q15	Tr,(2SB605)			
Q16	Tr,(2SD571)			
Q17	Tr,(2SB605)			
Q18	Tr,(2SD571)			
Q19	Tr,(2SC1907)			
Q20	Di,(1S953)			
Q21	Di,breakdown,(RD13EB)	12.4 to 14.1V,400mW		
Q22	IC,(TL7705CP-B)			
Q23	Tr,(2SD833)			
Q24	Tr,(2SD833)			
Q25	Tr,(2SD833)			
Q26	Tr,(2SD833)			
Q27	Tr,(2SD833)			
Q28	Tr,(2SD833)			
Q29	Tr,(2SD833)			
Q30	Tr,(2SD833)			
Q31	Tr,(2SD833)			
Q32	Tr,(2SD833)			
Q33	Not assigned			
Q34	Di,(μPA54H)			
Q35	Di,(μPA54H)			
Q36	Di,(1S953)			
Q37	Di,(1S953)			
Q38	Di,(1S953)			
Q39	Di,(1S953)			
Q40	Tr,(2SA836)			
Q41	Tr,(2SA836)			
Q42	IC,(74LS05)			
R 1	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 2	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 3	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R 4	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R 5	CF,(ARD25T102J)	1kΩ,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

M-1
44W77606 2/3

Parts List : R-Z18-Z1, PRINTER INTERFACE

CKT REF	DESCRIPTION	RATING		NOTE
R 6	Single in-line array, (IHR-4-332JA)	3.3kΩ x 4,1/8W		
R 7	Not assigned			
R 8	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R 9	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R10	CF,(ARD25T223J)	22kΩ,±5%,1/4W		
R11	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R12	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R13	CF,(ARD25T183J)	18kΩ,±5%,1/4W		
R14	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R15	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R16	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R17	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R19	CF,(ARD25T223J)	22kΩ,±5%,1/4W		
R20	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R21	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R22	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R23	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R24	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R25	CF,A(RD25T102J)	1kΩ,±5%,1/4W		
R26	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R27	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R28	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R29	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
P30	Not assigned			
R31	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R32	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R33	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R34	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R35	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R36	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R37	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R38	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R39	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R40	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R41	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R42	CF,(ARD25T104J)	100kΩ,±5%,1/4W		
R43	CF,(ARD25T103J)	10kΩ,±5%,1/4W		
R44	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R45	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
X 1	XTAL OSC, (TQC-208B-8R)	6MHz		

( ): Manufacturer's part number
* : Selected at factory

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Parts List : R-Z18-Z2, PRINTER CONTROL

CKT REF	DESCRIPTION	RATING		NOTE
J 1	Connector, (DF1-5P-2.5DSA)	5P		
Q 1	LED,(TLG226)			
S 1	Switch,(HL20-NS)			
S 2	Switch,(HL20-NS)			

( ): Manufacturer's part number
* : Selected at factory

44W77607 1/1

APPENDIX 1

OPTION CLOCK T-Z4 CIRCUIT DIAGRAM AND PARTS LIST

(1) Option Clock T-Z4 circuit diagram

Name	Z No.	Drawing No.
OPTION CLOCK	T-Z4	43W32995

(2) Option Clock T-Z4 Parts List

Option No.		Drawing No.
21	(35.008 MHz)	44W 82282
22	(41.2416 MHz)	44W 82283
23	(104.448 MHz)	44W 82284
24	(141.040 MHz)	44W 82285
25	(141.248 MHz)	44W 82286
26	(141.475 MHz)	44W 82287
27	(167.1168 MHz)	44W 82288
29	(32.064 MHz)	44W 82289
30	(110.592 MHz)	44W 82290
32	(143.360 MHz)	44W 82291
33	(30.720 MHz)	44W 82292
34	(64 kHz)	44W 82293
35	(25.776 MHz)	44W 82533
36	(8.192 MHz)	44W 82632
37	(70.848 MHz)	44W 84098
38	(34.724 MHz)	44W 84988
40	(168.443 MHz)	44W84823
42	(35.840 MHz)	44W84825
43	(35.9391 MHz)	44W84827
44	(155.520 MHz)	44W84828

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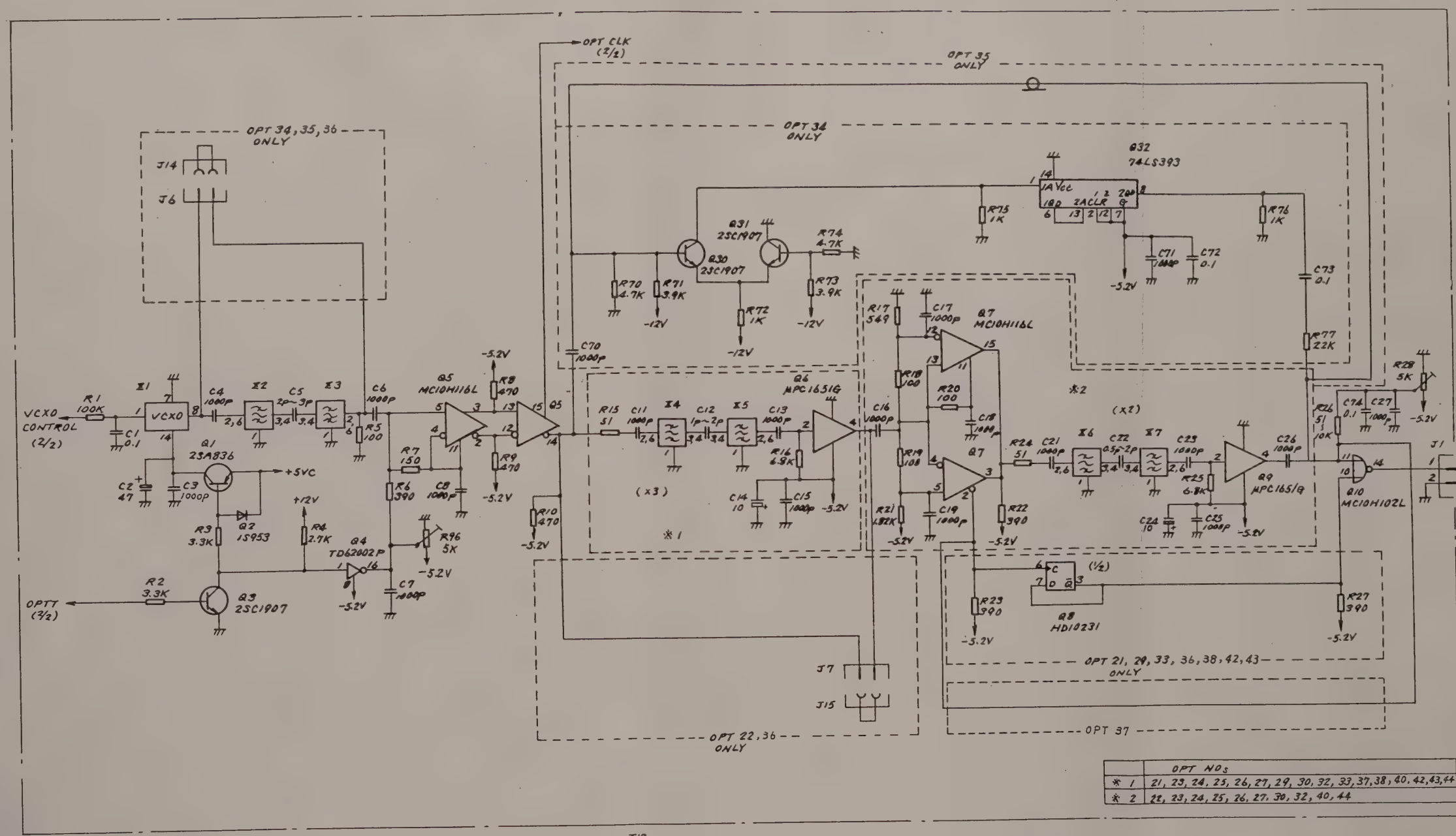
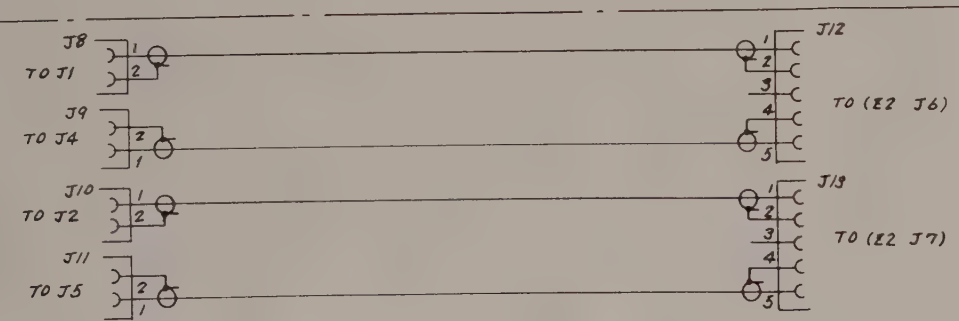
APPLICATION

REVISIONS



	OPT NOs
※ 1	21, 23, 24, 25, 26, 27, 29, 30, 32, 33, 37, 38, 40, 42, 43, 44
※ 2	22, 23, 24, 25, 26, 27, 30, 32, 40, 44



PARTS LIST 44W82282 ~44W82293, 44W82533, 44W82632, 44W84098, 44W84988 44W84827, 44W84828

QTY	ITEM	PART NO.	DESCRIPTION	MATERIAL	FINISH	NOTE

CHECKED BY | TRACED BY | SCALE /

APPROVED BY | DRAWN BY

TITLE Circuit Diagram of T-Z4 OPTION CLOCK

DRAWING NO. 43W32995 1/2

DEP

ANRITSU CORP.

A-3/(A-4 blank)

A3

APPLICATION

REVISIONS

*	ALL OTHERS	OPTION 34 ONLY
C100, C101	None	330P
C103	None	10
R41, R42	3.9K	1.5K
R45, R46	2.15K	1.80K
R58	1.2K to 3.3K	2.2K

OPTION 21, 22, 29, 33, 35, 38

OPTION 23, 24, 25, 26, 27, 30, 32, 34, 37, 40, 44

QTY	ITEM	PART NO.	DESCRIPTION	MATERIAL	FINISH	NOTE

CHECKED BY | TRACED BY | SCALE /

APPROVED BY | DRAWN BY

TITLE: Circuit Diagram of T-Z4 OPTION CLOCK

DRAWING NO. 43W32995 2/2

ANRITSU CORP.

PARTS LIST OF OPTION 21 (35.008MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04WLV100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Not assigned		
C22	Not assigned		
C23	Not assigned		
C24	Elect,(CE04WLV100)	10μF,±20%,35V	
C25	Not assigned		
C26	Not assigned		
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H121J)	120pF,±5%,50V	
C31	Cer,(CC924CH1H121J)	120pF,±5%,50V	
C32	Cer,(CC924CH1H750J)	75pF,±5%,50V	
C33	Cer,(CC924CH1H750J)	75pF,±5%,50V	
C34	Cer,(CC45CH1H150JY)	15pF,±5%,50V	
C35	Cer,(CC45CH1H150JY)	15pF,±5%,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Notaassigned		
C44	Not assigned		
C45	Cer,(RPE114C105MS0)	1μF,±20%,50V	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 21 (35.008MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8	Connector, (DF1-2S-2.5R24)	2P	
J 9	Connector, (DF1-2S-2.5R24)	2P	
J 10	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 21 (35.008MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
J11	Connector, (DF1-2S-2.5R24)	2P	
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(LF8-101K)	100μH	
L 2	Coil,(LF8-101K)	100μH	
L 3	Coil,(LF8-560K)	56μH	
L 4	Coil,(LF8-101K)	100μH	
L 5	Coil,(LF8-101K)	100μH	
L 6	Coil,(LF8-560K)	56μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Coil,(SP0408-R68K)	0.68μH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	IC,(HD10231)		
Q 9	Not assigned		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Tr,(2SA836)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 21 (35.008MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28	Not assigned		
Q29 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	Not assigned		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R21	Not assigned		
R22	Not assigned		
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R24	Not assigned		
R25	Not assigned		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R28	Var,MF,(RJ-6P 5k)	5k ,1/2W	
R29	Not assigned		
R30	Not assigned		
R31	Not assigned		
R32	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 21 (35.008MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W	
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W	
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R58	CF,(ARD25TJ32J)	3.3kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R66 to R89	Not assigned		
R90	Not assigned		
R91	Not assigned		
R92	Not assigned		
R93	Not assigned		
R94	Not assigned		
R95	Not assigned		
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 21 (35.008MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Z 1	VCXO,(44x79277G)	23.3387MHz	
Z 2	COIL,(7K9-23MTA, 44Z46083)		
Z 3	COIL,(7K9-23MTA, 44Z46083)		
Z 4	COIL,(7K9-68MTA, 44Z46083)		
Z 5	COIL,(7K9-68MTA, 44Z46083)		
Z 6	Not assigned		
Z 7	Not assigned		

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 22 (41.2416MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Not assigned		
C12	Not assigned		
C13	Not assigned		
C14	Not assigned		
C15	Not assigned		
C16	Elect,(CE04W1V100)	10μF,±20%,35V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10μF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H101J)	100pF,±5%,50V	
C31	Cer,(CC924CH1H101J)	100pF,±5%,50V	
C32	Cer,(CC924CH1H560J)	56pF,±5%,50V	
C33	Cer,(CC924CH1H560J)	56pF,±5%,50V	
C34	Cer,(CC45CH1H120JY)	12pF,±5%,50V	
C35	Cer,(CC45CH1H120JY)	12pF,±5%,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 22 (41.2416MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8	Connector, (DF1-2S-2.$R24)	2P	
J 9	Connector, (DF1-2S-2.5R24)	2P	
J10	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 22 (41.2416MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J11	Connector, (DF1-2S-2.5R24)	2P	
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(LF8-820K)	82μH	
L 2	Coil,(LF8-820K)	82μH	
L 3	Coil,(LF8-470K)	47μH	
L 4	Coil,(LF8-820K)	82μH	
L 5	Coil,(LF8-820K)	82μH	
L 6	Coil,(LF8-470K)	47μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Coil,(SP0408-R68K)	0.68μH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	Not assigned		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	IC,(μPC1651G)		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 22 (41.2416MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Tr,(2SA836)		
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	Not assigned		
R16	Not assigned		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	Not assigned		
R21	MF,(RN14K2E1821D)	1.82kΩ,±5%,1/4W	
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R23	Not assigned		
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 22 (41.2416MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
R31	Not assigned		
R32	Not assigned		
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W	
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R66 to R89	Not assigned		
R90	Not assigned		
R91	Not assigned		
R92	Not assigned		
R93	Not assigned		
R94	Not assigned		
R95	Not assigned		
R96	Var,MF,(RJ-6J 5kΩ)	5kΩ,1/2W	

( ): Manufacturer's part number
* Selected at factory

PARTS LIST OF OPTION 22 (41.2416MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Z 1	VCXO,(44x79277L)	20.6208MHz	
Z 2	COIL,(7K9-21MTA, 44246083)		
Z 3	COIL,(7K9-21MTA, 44246083)		
Z 4	Not assigned		
Z 5	Not assigned		
Z 6	COIL,(7K9-41MTC, 44246083)		
Z 7	COIL,(7K9-41MTC, 44246083)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 23 (104.448MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1uF,±20%,50V	
C 2	Elect,(CE04W1A470)	47µF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V	
C15	Cer,(CC924CH1H102J)	10µF,±20%,35V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Elect,(CE04W1V100)	1000pF,±5%,50V	
C20	Cer,(CK924		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10µF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC45CH1H390JY)	39pF,±5%,50V	
C31	Cer,(CC45CH1H390JY)	39pF,±5%,50V	
C32	Cer,(CC45CH1H240JY)	24pF,±5%,50V	
C33	Cer,(CC45CH1H240JY)	24pF,±5%,50V	
C34	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C35	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1µF,±20%,50V	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 23 (104.448MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01uF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100uF,±20%,25V	
C56	Elect,(CE04W1E101)	100uF,±20%,25V	
C57	Elect,(CE04W1A101)	100uF,±20%,10V	
C58	Elect,(CE04W1A101)	100uF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J11	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 23 (104.448MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(TP0206-390K)	39µH	
L 2	Coil,(TP0206-390K)	39µH	
L 3	Coil,(TP0206-180K)	18µH	
L 4	Coil,(TP0206-390K)	39µH	
L 5	Coil,(TP0206-390K)	39µH	
L 6	Coil,(TP0206-180K)	18µH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Aircore coil, (34L74432E)	98nH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(µPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	IC,(µPC1651G)		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 23 (104.448MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q22	IC,(HA3-2525-5)		
Q23	Not assigned		
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(µPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	Not assigned		
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W	
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R23	Not assigned		
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 23 (104.448MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
R31	Not assigned		
R32	Not assigned		
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W	
R57	Not assigned		
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R66 to R89	Not assigned		
R90	Not assigned		
R91	Not assigned		
R92	Not assigned		
R93	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 23 (104.448MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
R94	Not assigned		
R95	Not assigned		
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
Z 1	VCXO,(44x79277K)	17.408MHz	
Z 2	COIL,(7K9-17MAT, 44Z46083)		
Z 3	COIL,(7K9-17MAT, 44Z46083)		
Z 4	COIL,(7K9-52MTA, 44Z46083)		
Z 5	COIL,(7K9-52MTA, 44Z46083)		
Z 6	COIL,(7K9-104MTB, 44Z46083)		
Z 7	COIL,(7K9-104MTB, 44Z46083)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 24 (141.040MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924C1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924C1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04W1V100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10uF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H300J)	30pF,±5%,50V	
C31	Cer,(CC924CH1H300J)	30pF,±5%,50V	
C32	Cer,(CC924CH1H200J)	20pF,±5%,50V	
C33	Cer,(CC924CH1H200J)	20pF,±5%,50V	
C34	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C35	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 24 (141.040MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924C1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924C1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924C1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF2JA-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J11	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 24 (141.040MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(SP0408-270K)	27μH	
L 2	Coil,(SP0408-270K)	27μH	
L 3	Coil,(SP0408-150K)	15μH	
L 4	Coil,(SP0408-270K)	27μH	
L 5	Coil,(SP0408-270K)	27μH	
L 6	Coil,(SP0408-150K)	15μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Aircore coil, (34L74433C)	43nH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(RD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	IC,(μPC1651G)		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 24 (141.040MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28	Not assigned		
Q29 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	Not assigned		
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W	
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R23	Not assigned		
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		
R31	Not assigned		
R32	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 24 (141.040MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W	
R57	Not assigned		
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R66 to R89	Not assigned		
R90	Not assigned		
R91	Not assigned		
R92	Not assigned		
R93	Not assigned		
R94	Not assigned		
R95	Not assigned		
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 24 (141.040MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Z 1	VCXO,(44x79277M)	23.5413MHz	
Z 2	COIL,(7K9-23MTA, 44Z46083)		
Z 3	COIL,(7K9-23MTA, 44Z46083)		
Z 4	COIL,(7K9-68MTA, 44Z46083)		
Z 5	COIL,(7K9-68MTA, 44Z46083)		
Z 6	COIL,(7K9-139MTB, 44Z46083)		
Z 7	COIL,(7K9-139MTB, 44Z46083)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 25 (141.248MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Elect,(CE04W1V100)	10μF,±20%,35V	
C14	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10μF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H300J)	30pF,±5%,50V	
C31	Cer,(CC924CH1H300J)	30pF,±5%,50V	
C32	Cer,(CC924CH1H200J)	20pF,±5%,50V	
C33	Cer,(CC924CH1H200J)	20pF,±5%,50V	
C34	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C35	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 25 (141.248MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J11	Connector, (DF1-2P-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 25 (141.248MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(SP0408-270K)	27μH	
L 2	Coil,(SP0408-270K)	27μH	
L 3	Coil,(SP0408-150K)	15μH	
L 4	Coil,(SP0408-270K)	27μH	
L 5	Coil,(SP0408-270K)	27μH	
L 6	Coil,(SP0408-150K)	15μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Aircore coil, (34L74433C)	43nH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	IC,(μPC1651G)		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 25 (141.248MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q23	Not assigned		
Q24	Di,(PC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	Not assigned		
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W	
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R23	Not assigned		
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z2, CLOCK

CKT REF	DESCRIPTION	RATING		NOTE
Z 6	Not assigned			
Z 7	COIL,(7K9-23MTA)			
Z 8	COIL,(7K9-23MTA)			
Z 9	COIL,(7K9-23MTA)			
Z10	COIL,(7K9-23MTA)			
Z11	Not assigned			
Z12	Not assigned			
Z13	COIL,(7K9-68MTA)			
Z14	COIL,(7K9-68MTA)			
Z15	COIL,(7K9-139MTB)			
Z16	COIL,(7K9-139MTB)			
Z17	COIL,(7K9-68MTA)			
Z18	COIL,(7K9-68MTA)			
Z19	COIL,(7K9-139MTB)			
Z20	COIL,(7K9-139MTB)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Elect,(CE04W1E101)	100uF,±20%,25V		
C 2	Elect,(CE04W1E101)	100uF,±20%,25V		
C 3	Elect,(CE04W1E101)	100uF,±20%,25V		
C 4	Tant,(CS02H1E100M)	10uF,±20%,25V		
C 5	Cer,(CK924C1H103M)	0.01uF,±20%,50V		
C6 to C19	Not assigned			
C20 to C68	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V		
J 1	Connector			
J 2	Connector			
J 3	Not assigned			
J 4	Plug,(DP1-2P-2.5DSA)	2P		
J 5	Receptacle, (27DP-LR-PC)			
J 6	Receptacle, (27DP-LR-PC)			
J 7	Plug,(27D-P-1.5)			
J 8 to J11	Receptacle, (27DP-LR-PC)			Option 04
Q 1	Di,(1SS97)			
Q 2	Di,(1SS97)			
Q 3	Not assigned			
Q 4	Not assigned			
Q 5	Di,(1SS97)			
Q 6	Di,(1SS97)			
Q 7	Tr,(2SC1010)			
Q 8	Tr,(2SA578)			
Q 9	Not assigned			
Q10	Di,(1S953)			
Q11	Di,(1S953)			
Q12	Di,(1S953)			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Not assigned			
Q18	IC,(74LS138)			
Q19	IC,(74LS541)			
Q20	IC,(SN74ALS574N)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
Q21	IC,(HD10124)			
Q22	IC,(HD10124)			
Q23	IC,(HD10101)			
Q24	Not assigned			
Q25	Not assigned			
Q26	IC,(MC10176L)			
Q27	IC,(HD10136)			
Q28	IC,(HD10102)			
Q29	IC,(HD10109)			
Q30	IC,(HD10131)			
Q31	IC,(μPC71A)			
Q32	IC,(HD10131)			
Q33	IC,(HD10105)			
Q34	IC,(HD10109)			
Q35	Not assigned			
Q36	IC,(SN74ALS574N)			
Q37	IC,(SN74ALS574N)			
Q38	IC,(SN74ALS574N)			
Q39	IC,(SN74ALS574N)			
Q40	IC,(HD10164)			
Q41	IC,(HD10164)			
Q42	IC,(HD10164)			
Q43	IC,(HD10164)			
Q44	IC,(MC10H131L)			
Q45	Not assigned			
Q46	Not assigned			
Q47	IC,(MC10138L)			
Q48	IC,(MC10138L)			
Q49	IC,(MC10138L)			
Q50	IC,(MC10138L)			
Q51	IC,(MC10138L)			
Q52	IC,(MC10138L)			
Q53	IC,(HD10102)			
Q54	IC,(HD10102)			
Q55	IC,(MC10H131L)			
Q56	Not assigned			
Q57	Not assigned			
Q58	Not assigned			
Q59	Not assigned			
Q60	IC,(SN74ALS574N)			
Q61	Not assigned			
Q62	Not assigned			
Q63	IC,(MC10216L)			
Q64	IC,(HD10231)			
Q65	IC,(HD100102)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : T-Z3, PATTERN GENERATOR

CKT REF	DESCRIPTION	RATING		NOTE
Q66	IC,(HD10110)			
Q67	IC,(HD10110)			
Q68	IC,(HD10131)			
Q69	IC,(HD100102)			
Q70	Not assigned			
Q71	IC,(HD10131)			
Q72	IC,(MC10176L)			
Q73	IC,(MC10176L)			
Q74	IC,(MC10176L)			
Q75	IC,(MC10176L)			
Q76	IC,(MC10113L)			
Q77	IC,(MC10113L)			
Q78	IC,(MC10113L)			
Q79	Not assigned			
Q80	IC,(HD10131)			
Q81	IC,(MC10H102L)			
Q82	IC,(MC10H131L)			
Q83	IC,(SN74ALS574N)			
Q84	IC,(SN74ALS574N)			
Q85	IC,(HD10107)			
Q86	IC,(MC10176L)			
Q87	IC,(MC10H102L)			
Q88	IC,(MC10176L)			
Q89	IC,(HD10136)			
Q90	IC,(HD10131)			
Q91	IC,(MC10H102L)			
Q92	IC,(HD10136)			
Q93	IC,(HD10136)			
Q94	IC,(HD10105)			
Q95	IC,(MC10H131L)			
Q96	IC,(MC10H102L)			
Q97	IC,(MC10H131L)			
Q98	IC,(HD10131)			
Q99	IC,(MC10H131L)			
Q100	IC,(HD10131)			
Q101	IC,(HD10107)			
Q102	IC,(MC10H105L)			
Q103	IC,(MC10H102L)			
Q104	IC,(MC10H102L)			
R 1	CF,(ARD25T391J)	390..,±5%,1/4W		
R 2	Single in-line array, (IHR-4-681JA)	680 x 4,1/8W		
R 3	CF,(ARD25T222J)	2.2k..,±5%,1/4W		
R 4	CF,(ARD25T391J)	390..,±5%,1/4W		
R 5	CF,(ARD25T681J)	680..,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 26 (141.475MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
J12	Connector, (DF1-5S-2.5R24)	5P		
J13	Connector, (DF1-5S-2.5R24)	5P		
L 1	Coil,(SP0408-270K)	27μH		
L 2	Coil,(SP0408-270K)	27μH		
L 3	Coil,(SP0408-150K)	15μH		
L 4	Coil,(SP0408-270K)	27μH		
L 5	Coil,(SP0408-270K)	27uH		
L 6	Coil,(SP0408-150K)	15uH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Aircore coil, (34L74433C)	43nH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC,(μPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	Not assigned			
Q 9	IC,(μPC1651G)			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 26 (141.475MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
Q22	IC,(HA3-2525-5)			
Q23	Not assigned			
Q24	Di,(PC52M)			
Q25	IC,(MC1648P)			
Q26	IC,(uPC277C)			
Q27	IC,(MC10H102L)			
Q28 to Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W		
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	Not assigned			
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W		
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R23	Not assigned			
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R27	Not assigned			
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R29	Not assigned			
R30	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 26 (141.475MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W		
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R57	Not assigned			
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(PJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 26 (141.475MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R94	Not assigned			
R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	VCXO,(44x79277H)	23.5792MHz		
Z 2	COIL,(7K9-23MTA, 44Z46083)			
Z 3	COIL,(7K9-23MTA, 44Z46083)			
Z 4	COIL,(7K9-68MTA, 44Z46083)			
Z 5	COIL,(7K9-68MTA, 44Z46083)			
Z 6	COIL,(7K9-139MTB, 44Z46083)			
Z 7	COIL,(7K9-139MTB, 44Z46083)			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 27 (167.1168MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04W1V100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H0R5CY)	0.5pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10μF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC45CH1H240JY)	24pF,±5%,50V	
C31	Cer,(CC45CH1H240JY)	24pF,±5%,50V	
C32	Cer,(CC45CH1H160JY)	16pF,±5%,50V	
C33	Cer,(CC45CH1H160JY)	16pF,±5%,50V	
C34	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V	
C35	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
*: Selected at factory

PARTS LIST OF OPTION 27 (167.1168MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF2JA-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J10	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
*: Selected at factory

PARTS LIST OF OPTION 27 (167.1168MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J11	Connector, (DF1-2S-2.5R24)	2P	
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(SP0408-220K)	22μH	
L 2	Coil,(SP0408-220K)	22μH	
L 3	Coil,(SP0408-120K)	12μH	
L 4	Coil,(SP0408-220K)	22μH	
L 5	Coil,(SP0408-220K)	22μH	
L 6	Coil,(SP0408-120K)	12μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Aircore coil, (34L74432C)	35nH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	IC,(μPC1651G)		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		

( ): Manufacturer's part number
*: Selected at factory

PARTS LIST OF OPTION 27 (167.1168MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Not assigned		
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	Not assigned		
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W	
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R23	Not assigned		
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		

( ): Manufacturer's part number
*: Selected at factory

PARTS LIST OF OPTION 27 (167.1168MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
R31	Not assigned		
R32	Not assigned		
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(PJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W	
R57	Not assigned		
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R66 to R89	Not assigned		
R90	Not assigned		
R91	Not assigned		
R92	Not assinged		
R93	Not assigned		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 27 (167.1168MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
R94	Not assigned		
R95	Not assigned		
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
Z 1	VCXO,(44x79277J)	27.8528MHz	
Z 2	COIL,(7K9-27MTB, 44Z46083)		
Z 3	COIL,(7K9-27MTB, 44Z46083)		
Z 4	COIL,(7K9-83MTA, 44Z46083)		
Z 5	COIL,(7K9-83MTA, 44Z46083)		
Z 6	COIL,(7K9-167MTC, 44Z46083)		
Z 7	COIL,(7K9-167MTC, 44Z46083)		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 29 (32.064MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04W1V100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Not assigned		
C22	Not assigned		
C23	Not assigned		
C24	Not assigned		
C25	Not assigned		
C26	Not assigned		
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H121J)	120pF,±5%,50V	
C31	Cer,(CC924CH1H121J)	120pF,±5%,50V	
C32	Cer,(CC924CH1H750J)	75pF,±5%,50V	
C33	Cer,(CC924CH1H750J)	57pF,±5%,50V	
C34	Cer,(CC45CH1H150JY)	15pF,±5%,50V	
C35	Cer,(CC45CH1H150JY)	15pF,±5%,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 29 (32.064MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF3BA-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J10	Connector, (DF1-2P-2.5R24)	2P	

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 29 (32.064MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
J11	Connector, (DF1-2S-2.5R24)	2P		
J12	Connector, (DF1-5S-2.5R24)	5P		
J13	Connector, (DF1-5S-2.5R24)	5P		
L 1	Coil,(LF8-101K)	100μH		
L 2	Coil,(LF8-101K)	100μH		
L 3	Coil,(LF8-560K)	56μH		
L 4	Coil,(LF8-101K)	100μH		
L 5	Coil,(LF8-101K)	100μH		
L 6	Coil,(LF8-560K)	56μH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Coil,(SP0408-1R0K)	1μH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC,(μPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	IC,(HD10231)			
Q 9	Not assigned			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 29 (32.064MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Tr,(2SA836)			
Q24	Di,(FCS2M)			
Q25	IC,(MC1648P)			
Q26	IC,(μPC277C)			
Q27	IC,(MC10H102L)			
Q28 to Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W		
R18	Not assigned			
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R21	Not assigned			
R22	Not assigned			
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R24	Not assigned			
R25	Not assigned			
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R29	Not assigned			
R30	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 29 (32.064MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 29 (32.064MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
R94	Not assigned			
R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	VCXO,(44x79277F)	21.376MHz		
Z 2	COIL,(7K9-21MTA, 44Z46083)			
Z 3	COIL,(7K9-21MTA, 44Z46083)			
Z 4	COIL,(7K9-64MTD, 44Z46083)			
Z 5	COIL,(7K9-64MTD, 44Z46083)			
Z 6	Not assigned			
Z 7	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 30 (110.592MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04W1V100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10μF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC45CH1H390JY)	39pF,±5%,50V	
C31	Cer,(CC45CH1H390JY)	39pF,±5%,50V	
C32	Cer,(CC45CH1H240JY)	24pF,±5%,50V	
C33	Cer,(CC45CH1H240JY)	24pF,±5%,50V	
C34	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C35	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 30 (110.592MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H103J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF3BA-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J10	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 30 (110.592MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
J11	Connector, (DF1-2S-2.5R24)	2P	
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(TP0206-390K)	39μH	
L 2	Coil,(TP0206-390K)	39μH	
L 3	Coil,(TP0206-180K)	18μH	
L 4	Coil,(TP0206-390K)	39μH	
L 5	Coil,(TP0206-390K)	39μH	
L 6	Coil,(TP0206-180K)	18μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Aircore coil, (34L74432E)	98nH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	IC,(μPC1651G)		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 30 (110.592MHz), T-24

CKT REF	DESCRIPTION	RATING	NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Not assigned		
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	Not assigned		
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W	
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R23	Not assigned		
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 30 (110.592MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
R31	Not assigned	82Ω,±5%,1/4W	
R32	Not assigned	82Ω,±5%,1/4W	
R33	Not assigned	180Ω,±5%,1/4W	
R34	Not assigned	180Ω,±5%,1/4W	
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W	
R57	Not assigned		
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R66 to R89	Not assigned		
R90	Not assigned		
R91	Not assigned		
R92	Not assigned		
R93	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 30 (110.592MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
R94	Not assigned		
R95	Not assigned		
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
Z 1	VCXO,(44x79277E)	18.432MHz	
Z 2	COIL,(7K9-18MTA, 44Z46083)		
Z 3	COIL,(7K9-18MTA, 44Z46083)		
Z 4	COIL,(7K9-55MTA, 44Z46083)		
Z 5	COIL,(7K9-55MTA, 44Z46083)		
Z 6	COIL,(7K9-110MTB, 44Z46083)		
Z 7	COIL,(7K9-110MTB, 44Z46083)		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 32 (143.360MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04W1V100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C22	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C24	Elect,(CE04W1V100)	10μF,±20%,35V	
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H300J)	30pF,±5%,50V	
C31	Cer,(CC924CH1H300J)	30pF,±5%,50V	
C32	Cer,(CC924CH1H200J)	20pF,±5%,50V	
C33	Cer,(CC924CH1H200J)	20pF,±5%,50V	
C34	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C35	Cer,(CC45CH1H040CY)	4pF,±0.25pF,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 32 (143.360MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J10	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 32 (143.360MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
J11	Connector, (DF1-2S-2.5R24)	2P		
J12	Connector, (DF1-5S-2.5R24)	5P		
J13	Connector, (DF1-5S-2.5R24)	5P		
L 1	Coil,(SP0408-270K)	27μH		
L 2	Coil,(SP0408-270K)	27μH		
L 3	Coil,(SP0408-150K)	15μH		
L 4	Coil,(SP0408-270K)	27μH		
L 5	Coil,(SP0408-270K)	27μH		
L 6	Coil,(SP0408-150K)	15μH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Aircore coil, (34L74433C)	43nH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC,(μPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	Not assigned			
Q 9	IC,(μPC1651G)			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 32 (143.360MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4,1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Not assigned			
Q24	DI,(FC52M)			
Q25	IC,(MC1648P)			
Q26	IC,(μPC277C)			
Q27	IC,(MC10H102L)			
Q28 to Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W		
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	Not assigned			
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W		
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R23	Not assigned			
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R27	Not assigned			
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R29	Not assigned			
R30	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 32 (143.360MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/2W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN13K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W		
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R57	Not assigned			
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 32 (143.360MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R94	Not assigned			
R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	VCXO,(44x79277P)	23.8933MHz		
Z 2	COIL,(7K9-23MTA, 44Z46083)			
Z 3	COIL,(7K9-23MTA, 44Z46083)			
Z 4	COIL,(7K9-68MTA, 44Z46083)			
Z 5	COIL,(7K9-68MTA, 44Z46083)			
Z 6	COIL,(7K9-139MTB, 44Z46083)			
Z 7	COIL,(7K9-139MTB, 44Z46083)			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 33 (30.720MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 5	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9	Not assigned		
C10	Not assigned		
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C14	Elect,(CE04W1V100)	10μF,±20%,35V	
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C20	Not assigned		
C21	Not assigned		
C22	Not assigned		
C23	Not assigned		
C24	Not assigned		
C25	Not assigned		
C26	Not assigned		
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H121J)	120pF,±5%,50V	
C31	Cer,(CC924CH1H121J)	120pF,±5%,50V	
C32	Cer,(CC924CH1H750J)	75pF,±5%,50V	
C33	Cer,(CC924CH1H750J)	75pF,±5%,50V	
C34	Cer,(CC45CH1H150JY)	15pF,±5%,50V	
C35	Cer,(CC45CH1H150JY)	15pF,±5%,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 33 (30.720MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P•2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (HIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8 to J10	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 33 (30.720MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J11	Connector, (DF1-2S-2.5R24)	2P	
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
L 1	Coil,(LF8-101K)	100μH	
L 2	Coil,(LF8-101K)	100μH	
L 3	Coil,(LF8-560K)	56μH	
L 4	Coil,(LF8-101K)	100μH	
L 5	Coil,(LF8-101K)	100μH	
L 6	Coil,(LF8-560K)	56μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Coil,(SP0408-1R0K)	1μH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	IC,(HD10231)		
Q 9	Not assigned		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 33 (30.720MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HAJ-2525-5)		
Q23	Tr,(2SA836)		
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	Not assigned		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R21	Not assigned		
R22	Not assigned		
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R24	Not assigned		
R25	Not assigned		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST OF OPTION 33 (30.720MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(APD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 33 (30.720MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R94	Not assigned			
R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	VCXO,(44x79277R)	20.480MHz		
Z 2	COIL,(7K9-21MTA, 44Z46083)			
Z 3	COIL,(7K9-21MTA, 44Z46083)			
Z 4	COIL,(7K9-61MTD, 44Z46083)			
Z 5	COIL,(7K9-61MTD, 44X46083)			
Z 6	Not assigned			
Z 7	Not assigned			

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 34 (64kHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Elect,(CE04W1A470)	47μF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Not assigned			
C 5	Not assigned			
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9 to C26	Not assigned			
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C28	Not assigned			
C29	Not assigned			
C30	Not assigned			
C31	Not assigned			
C32	Not assigned			
C33	Not assigned			
C34	Not assigned			
C35	Not assigned			
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Not assigned			
C41	Not assigned			
C42	Not assigned			
C43	Not assigned			
C44	Not assigned			
C45	Cer,(RPE114C105M50)	1μF,±20%,50V		
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V		
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C52	Not assigned			
C53	Not assigned			
C54	Not assigned			
C55	Elect,(CE04W1E101)	100μF,±20%,25V		
C56	Elect,(CE04W1E101)	100μF,±20%,25V		
C57	Elect,(CE04W1A101)	100μF,±20%,10V		
C58	Elect,(CE04W1A101)	100μF,±20%,10V		
C59	Cer,(CK924F1H104Z)			
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 34 (64kHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62 to C69	Not assigned			
C70	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C71	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C72	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C73	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C74	Not assigned			
C75	Not assigned			
C76	Not assigned			
C77	Plast,(ECQ-P1 563FZ)	0.056μF,±1%,100V		
C78	Plast,(ECQ-P1 363FZ)	0.036μF,±1%,100V		
C79	Plast,(ECQ-P1 752FZ)	7500pF,±1%,100V		
C80	Plast,(ECQ-P1 563FZ)	0.056μF,±1%,100V		
C81	Plast,(ECQ-P1 363FZ)	0.036μF,±1%,100V		
C82	Plast,(ECQ-P1 752FZ)	7500pF,±1%,100V		
C83	Not assigned			
C84	Not assigned			
C85	Not assigned			
C86	Not assigned			
C87	Not assigned			
C88	Not assigned			
C89	Not assigned			
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C96	Not assigned			
C97	Not assigned			
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C100	Cer,(CC924CH1H331J)	330pF,±5%,50V		
C101	Cer,(CC924CH1H331J)	330pF,±5%,50V		
C102	Cer,(CK45B1H102KY)	1000pF,±10%,50V		
C103	Elect,(CE04C1H100A)	10μF,±20%,50V		
J 1	Connector, (DF1-2P-2.5DSA)	2P		
J 2	Connector, (DF1-2P-2.5DSA)	2P		
J 3	Connector, (HIF2BA-16D-AA-20S)	16P		
J 4	Connector, (DF1-2P-2.5DSA)	2P		
J 5	Connector, (DF1-2P-2.5DSA)	2P		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 34 (64kHz), T-24

CRT REF	DESCRIPTION	RATING		NOTE
J 6	Plug,(Z-149-2P)	2P		
J 7	Plug,(Z-149-2P)	2P		
J 8	Plug,(Z-128)			
J 9	Plug,(Z-128)			
J10	Connector, (DF1-2S-2.5R24)	2P		
J11	Connector, (DF1-2S-2.5R24)	2P		
J12	Connector, (DF1-2S-2.5R24)	2P		
J13	Connector, (DF1-2S-2.5R24)	2P		
J14	Connector, (DF1-5S-2.5R24)	5P		
J15	Connector, (DF1-5S-2.5R24)	5P		
L 1	Not assigned			
L 2	Not assigned			
L 3	Not assigned			
L 4	Not assigned			
L 5	Not assigned			
L 6	Not assigned			
L 7	Coil,(PL11H563J)	56000uH,±5%		
L 8	Coil,(PL11H563J)	56000uH,±5%		
L 9	Coil,(EL0909SKI-273K-2)	27000uH,±5%		
L10	Coil,(PL11H563J)	56000uH,±5%		
L11	Coil,(PL11H563J)	56000uH,±5%		
L12	Coil,(EL0909SKI-273K-2)	27000uH,±5%		
L13	Not assigned			
L14	Not assigned			
L15	Coil,(EL0909SKI-223K-2)	22000uH,±5%		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	Not assigned			
Q 7	Not assigned			
Q 8	Not assigned			
Q 9	Not assigned			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			

( ): Manufacturer s part number
* : Selected at factory

PARTS LIST OF OPTION 34 (64kHz), T-24

CRT REF	DESCRIPTION	RATING		NOTE
Q13 to Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Not assigned			
Q24	Di,vari-cap,(FC66M)			
Q25	IC,(MC1648P)			
Q26	IC,(uPC277C)			
Q27	IC,(MC10H102L)			
Q28	Not assigned			
Q29	Not assigned			
Q30	Tr,(2SC1907)			
Q31	Tr,(2SC1907)			
Q32	IC,(74LS393)			
Q33	Di,(FC66M)			
Q34	IC,(HD10116)			
Q35	Not assigned			
Q36	Not assigned			
Q37	Not assigned			
Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	Not assigned			
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R77	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11 to R25	Not assigned			
R26	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R27	Not assigned			
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R29	Not assigned			
R30	Not assigned			
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 34, (64kHz), T-24

CRT REF	DESCRIPTION	RATING		NOTE
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R42	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2D2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R57	Not assigned			
R58	CF,(ARD25T222J)	2.2kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66	Not assigned			
R67	Not assigned			
R68	Not assigned			
R69	Not assigned			
R70	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R71	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R72	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R73	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R74	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R75	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R76	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R77	CF,(ARD25T223J)	22kΩ,±5%,1/4W		
R78	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 34 (64kHz), T-24

CRT REF	DESCRIPTION	RATING		NOTE
R79	Not assigned			
R80	CF,(ARD25T221J)	220Ω,±5%,1/4W		
R81	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R82	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R83	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R84	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R85	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R86	Not assigned			
R87	CF,(ARD25T511J)	510Ω,±5%,1/4W		
R88	Not assigned			
R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			
	Not assigned			
R94	Not assigned			
R95	Not assigned			
Z 1	VCXO,(44X79277A)	16.384MHz		
Z 2	Not assigned			
Z 3	Not assigned			
Z 4	Not assigned			
Z 5	Not assigned			
Z 6	Not assigned			
Z 7	Not assigned			

( ): Manufacturer s part number
* : Selected at factory

PARTS LIST OF OPTION 35 (25.776MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	
C 2	Elect,(CE04W1A47C)	47μF,±20%,10V	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 4	Not assigned		
C 5	Not assigned		
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C 9 to C26	Not assigned		
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C28	Not assigned		
C29	Not assigned		
C30	Cer,(CC924CH1H151J)	150pF,±5%,50V	
C31	Cer,(CC924CH1H151J)	150pF,±5%,50V	
C32	Cer,(CC924CH1H101J)	100pF,±5%,50V	
C33	Cer,(CC924CH1H101J)	100pF,±5%,50V	
C34	Cer,(CC45CH1H200JY)	20pF,±5%,50V	
C35	Cer,(CC45CH1H200JY)	20pF,±5%,50V	
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C40	Not assigned		
C41	Not assigned		
C42	Not assigned		
C43	Not assigned		
C44	Not assigned		
C45	Cer,(RPE114C105M50)	1μF,±20%,50V	
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V	
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 35 (25.776MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C69	Not assigned		
C70	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C71 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (MIF23A-16D-AA-20SJ	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Connector,(Z-149-2P)	2P	
J 7	Not assigned		
J 8 to J11	Connector, (DF1-2S-2.5R24)	2P	
J12	Connector, (DF1-5S-2.5R24)	5P	
J13	Connector, (DF1-5S-2.5R24)	5P	
J14	Plug,(Z128)	2P	
J15	Not assigned		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 35 (25.776MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
L 1	Coil,(LF8-151K)	150μH	
L 2	Coil,(LF8-151K)	150μH	
L 3	Coil,(LF8-820K)	82μH	
L 4	Coil,(LF8-151K)	150μH	
L 5	Coil,(LF8-151K)	150μH	
L 6	Coil,(LF8-820K)	82μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Coil,(SP0408-1R2K)	1.2μH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S935)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	Not assigned		
Q 7	Not assigned		
Q 8	Not assigned		
Q 9	Not assigned		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Tr,(2SA83C)		
Q24	Di,(FC52K)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28 to Q35	Not assigned		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 35 (25.776MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q36	Not assigned		
Q37	Not assigned		
Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	Not assigned		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11 to R25	Not assigned		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	Not assigned		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		
R31	Not assigned		
R32	Not assigned		
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500)	500 ,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		

( ): Manufacturer's part number
• : Selected at factory

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PARTS LIST OF OPTION 35 (25.776MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			
R94	Not assigned			
R95	Not assigned			
Z 1	VCXO,(44X79277S)	25.776MHz		
Z 2	Not assigned			
Z 3	Not assigned			
Z 4	Not assigned			
Z 5	Not assigned			
Z 6	Not assigned			
Z 7	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

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PARTS LIST OF OPTION 36 (8.192 MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Elect,(CE04W1A470)	47μF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Not assigned			
C 5	Not assigned			
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9	Not assigned			
C10	Not assigned			
C11	Not assigned			
C12	Not assigned			
C13	Not assigned			
C14	Not assigned			
C15	Not assigned			
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C20	Not assigned			
C21	Not assigned			
C22	Not assigned			
C23	Not assigned			
C24	Not assigned			
C25	Not assigned			
C26	Not assigned			
C27	Not assigned			
C28	Not assigned			
C29	Not assigned			
C30	Cer,(RPE111CH471G50)	470pF,±2%,50V		
C31	Cer,(RPE111CH471G50)	470pF,±2%,50V		
C32	Cer,(RPE111CH471G50)	470pF,±2%,50V		
C33	Cer,(RPE111CH471G50)	470pF,±2%,50V		
C34	Cer,(CC924CH1H680J)	68pF,±5%,50V		
C35	Cer,(CC924CH1H680J)	68pF,±5%,50V		
C36	Not assigned			
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Not assigned			
C41	Not assigned			
C42	Not assigned			
C43	Not assigned			
C44	Not assigned			
C45	Cer,(RPE114C105M50)	1μF,±20%,50V		

( ): Manufacturer's part number
* : Selected at factory

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PARTS LIST OF OPTION 36 (8.192 MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C52	Not assigned			
C53	Not assigned			
C54	Not assigned			
C55	Elect,(CE04W1E101)	100μF,±20%,25V		
C56	Elect,(CE04W1E101)	100μF,±20%,25V		
C57	Elect,(CE04W1A101)	100μF,±20%,10V		
C58	Elect,(CE04W1A101)	100μF,±20%,10V		
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62 to C89	Not assigned			
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C93	Not assigned			
C94	Not assigned			
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C96	Not assigned			
C97	Not assigned			
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Connector, (DF1-2P-2.5DSA)	2P		
J 2	Connector, (DF1-2P-2.5DSA)	2P		
J 3	Connector, (HIF2JA-16C-AA-20S)	16P		
J 4	Connector, (DF1-2P-2.5DSA)	2P		
J 5	Connector, (DF1-2P-2.5DSA)	2P		
J 6	Not assigned			
J 7	Not assigned			
J 8	Connector, (DF1-2S-2.5R24)	2P		
J 9	Connector, (DF1-2S-2.5R24)	2P		

( ): Manufacturer's part number
* : Selected at factory

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PARTS LIST OF OPTION 36 (8.192 MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
J10	Connector, (DF1-2S-2.5R24)	2P		
J11	Connector, (DF1-2S-2.5R24)	2P		
J12	Connector, (DF1-5S-2.5R24)	5P		
J13	Connector, (DF1-5S-2.5R24)	5P		
L 1	Coil,(LF8-471K)	470μH		
L 2	Coil,(LF8-471K)	470μH		
L 3	Coil,(LF8-221K)	220μH		
L 4	Coil,(LF8-471K)	470μH		
L 5	Coil,(LF8-471K)	470μH		
L 6	Coil,(LF8-221K)	220μH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Coil,(SP0408-8R2K)	8.2μH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	Not assigned			
Q 7	IC,(MC10H116L)			
Q 8	IC,(HD102J1)			
Q 9	Not assigned			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			

( ): Manufacturer's part number
* : Selected at factory

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PARTS LIST OF OPTION 36 (8.192 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Tr,(2SA836)			
Q24	Di,(FC52M)			
Q25	IC,(MC1648P)			
Q26	IC,(μPC277C)			
Q27	IC,(MC10H102L)			
Q28	Not assigned			
Q29	Not assigned			
Q30	Not assigned			
Q31	Not assigned			
Q32	Not assigned			
Q33	Not assigned			
Q34	Not assigned			
Q35	Not assigned			
Q36	Not assigned			
Q37	Not assigned			
Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	Not assigned			
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	Not assigned			
R16	Not assigned			
R17	Not assigned			
R18	Not assigned			
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R21	Not assigned			
R22	Not assigned			
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R24	Not assigned			
R25	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 36 (8.192 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R26	Not assigned			
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R28	Not assigned			
R29	Not assigned			
R30	Not assigned			
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

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PARTS LIST OF OPTION 36 (8.192 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			
R94	Not assigned			
R95	Not assigned			
Z 1	XTAL OSC,(44X79277A)	16.384MHz		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 37 (70.848 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Elect,(CE04W1A470)	47μF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9	Not assigned			
C10	Not assigned			
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C14	Elect,(CE04W1V100)	10μF,±20%,35V		
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C20	Not assigned			
C21	Not assigned			
C22	Not assigned			
C23	Not assigned			
C24	Not assigned			
C25	Not assigned			
C26	Not assigned			
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C28	Not assigned			
C29	Not assigned			
C30	Cer,(CC924CH1H560J)	56pF,±5%,50V		
C31	Cer,(CC924CH1H560J)	56pF,±5%,50V		
C32	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C33	Cer,(CC924CH1H390J)	39pF,±5%,50V		
C34	Cer,(CC924CH1H070D)	7pF,±0.5pF,50V		
C35	Cer,(CC924CH1H070D)	7pF,±0.5pF,50V		
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Not assigned			
C41	Not assigned			
C42	Not assigned			
C43	Not assigned			
C44	Not assigned			
C45	Cer,(RPE114C105M50)	1μF,±20%,50V		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 37 (70.848 MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
C46	Not assigned		
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V	
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C52	Not assigned		
C53	Not assigned		
C54	Not assigned		
C55	Elect,(CE04W1E101)	100μF,±20%,25V	
C56	Elect,(CE04W1E101)	100μF,±20%,25V	
C57	Elect,(CE04W1A101)	100μF,±20%,10V	
C58	Elect,(CE04W1A101)	100μF,±20%,10V	
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C62 to C89	Not assigned		
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	
C96	Not assigned		
C97	Not assigned		
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	
J 1	Connector, (DF1-2P-2.5DSA)	2P	
J 2	Connector, (DF1-2P-2.5DSA)	2P	
J 3	Connector, (MIF23A-16D-AA-20S)	16P	
J 4	Connector, (DF1-2P-2.5DSA)	2P	
J 5	Connector, (DF1-2P-2.5DSA)	2P	
J 6	Not assigned		
J 7	Not assigned		
J 8	Connector, (DF1-2S-2.5R24)	2P	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 37 (70.848 MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
J 9	Connector, (DF1-2S-2.5R24)	2P	
J10	Connector, (DF1-2S-2.5R24)	2P	
J11	Connector, (DF1-2S-2.5DSA)	2P	
J12	Connector, (DF1-5S-2.5R24)	2P	
J13	Connector, (DF1-5S-2.5R24)	2P	
J14	Not assigned		
J15	Not assigned		
L 1	Coil,(TP0206-470K)	47μH	
L 2	Coil,(TP0206-470K)	47μH	
L 3	Coil,(TP0206-270K)	27μH	
L 4	Coil,(TP0206-470K)	47μH	
L 5	Coil,(TP0206-470K)	47μH	
L 6	Coil,(TP0206-270K)	27μH	
L 7	Not assigned		
L 8	Not assigned		
L 9	Not assigned		
L10	Not assigned		
L11	Not assigned		
L12	Not assigned		
L13	Not assigned		
L14	Not assigned		
L15	Coil,(SP0408-R22K)	0.22μH	
Q 1	Tr,(2SA836)		
Q 2	Di,(1S953)		
Q 3	Tr,(2SC1907)		
Q 4	IC,(TD62002P)		
Q 5	IC,(MC10H116L)		
Q 6	IC,(μPC1651G)		
Q 7	IC,(MC10H116L)		
Q 8	Not assigned		
Q 9	Not assigned		
Q10	IC,(MC10H102L)		
Q11	Not assigned		
Q12	Not assigned		
Q13	Not assigned		
Q14	Not assigned		
Q15	Not assigned		

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 37 (70.848 MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
Q16	Not assigned		
Q17	Tr,(2SC1907)		
Q18	Tr,(2SC1907)		
Q19	IC,(HA3-2525-5)		
Q20	Di,(1S953)		
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW	
Q22	IC,(HA3-2525-5)		
Q23	Not assigned		
Q24	Di,(FC52M)		
Q25	IC,(MC1648P)		
Q26	IC,(μPC277C)		
Q27	IC,(MC10H102L)		
Q28	Not assigned		
Q29	Not assigned		
Q30	Not assigned		
Q31	Not assigned		
Q32	Not assigned		
Q33	Not assigned		
Q34	Not assigned		
Q35	Not assigned		
Q36	Not assigned		
Q37	Not assigned		
Q38	Not assigned		
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R11	Not assigned		
R12	Not assigned		
R13	Not assigned		
R14	Not assigned		
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R18	Not assigned		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 37 (70.848 MHz), T-Z4

CKT REF	DESCRIPTION	RATING	NOTE
R21	Not assigned		
R22	Not assigned		
R23	Not assigned		
R24	Not assigned		
R25	Not assigned		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R29	Not assigned		
R30	Not assigned		
R31	Not assigned		
R32	Not assigned		
R33	Not assigned		
R34	Not assigned		
R35	Not assigned		
R36	Not assigned		
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W	
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W	
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R49	Not assigned		
R50	Not assigned		
R51	Not assigned		
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W	
R57	Not assigned		
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W	
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W	
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST OF OPTION 37 (70.848 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
R86 to R89	Not assigned			
R90	Not assigned			
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			
R94	Not assigned			
R95	Not assigned			
R96	Var,MF,(RJ-6P 5k)	5kΩ,1/2W		
Z 1	XTAL OSC, (44X79277T VCXO)	23.6160MHz		
Z 2	COIL,(7K9-24MTC)			44Z46083
Z 3	COIL,(7K9-24MTC)			44Z46083
Z 4	COIL,(7K9-71MTA)			44Z46083
Z 5	COIL,(7K9-71MTA)			44Z46083

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST : OPTION 38 (34.724 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Elect,(CE04W1A470)	47μF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9	Not assigned			
C10	Not assigned			
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C14	Elect,(CE04W1V100)	10μF,±20%,35V		
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C20	Not assigned			
C21	Not assigned			
C22	Not assigned			
C23	Not assigned			
C24	Not assigned			
C25	Not assigned			
C26	Not assigned			
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C28	Not assgined			
C29	Not assigned			
C30	Cer,(CC924CH1H121J)	120pF,±5%,50V		
C31	Cer,(CC924CH1H121J)	120pF,±5%,50V		
C32	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C33	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C34	Cer,(CC45CH1H150JY)	15pF,±5%,50V		
C35	Cer,(CC45CH1H150JY)	15pF,±5%,50V		
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Not assigned			
C41	Not assigned			
C42	Not assigned			
C43	Not assigned			
C44	Not assigned			
C45	Cer,(RPE114C105M50)	1μF,±20%,50V		

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST : OPTION 38 (34.724 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C52	Not assigned			
C53	Not assigned			
C54	Not assigned			
C55	Elect,(CE04W1E101)	100μF,±20%,25V		
C56	Elect,(CE04W1E101)	100μF,±20%,25V		
C57	Elect,(CE04W1A101)	100μF,±20%,10V		
C58	Elect,(CE04W1A101)	100μF,±20%,10V		
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62 to C89	Not assigned			
C90	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C91	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C96	Not assigned			
C97	Not assigned			
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Connector, (DF1-2P-2.5DSA)	2P		
J 2	Connector, (DF1-2P-2.5DSA)	2P		
J 3	Connector, (HIF23A-16D-AA20S)	16P		
J 4	Connector, (DF1-2P-2.5DSA)	2P		
J 5	Connector, (DF1-2P-2.5DSA)	2P		
J 6	Not assigned			
J 7	Not assigned			
J 8	Connector, (DF1-2S-2.5R24)	2P		
J 9	Connector, (DF1-2S-2.5R24)	2P		

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST : OPTION 38 (34.724 MHz), T-Z4

CKT REF	DESCRIPTION	RATING		NOTE
J10	Connector, (DF1-2S-2.5R24)	2P		
J11	Connector, (DF1-2S-2.5R24)	2P		
J12	Connector, (DF1-5S-2.5R24)	5P		
J13	Connector, (DF1-5S-2.5R24)	5P		
L 1	Coil,(LF8-101K)	100μH		
L 2	Coil,(LF8-101K)	100μH		
L 3	Coil,(LF8-560K)	560μH		
L 4	Coil,(LF8-101K)	100μH		
L 5	Coil,(LF8-101K)	100μH		
L 6	Coil,(LF8-560K)	56μH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Coil,(SP0408-R68K)	0.68μH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC,(μPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	IC,(HD10231)			
Q 9	Not assigned			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			

( ): Manufacturer's part number
• : Selected at factory

PARTS LIST : OPTION 38 (34.724 MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Tr,(2SA836)			
Q24	Di,varicap,(FC52M)			
Q25	IC,(MC1648P)			
Q26	IC,(μPC277C)			
Q27	IC,(MC10H102L)			
Q28	Not assigned			
Q29	Not assigned			
Q30	Not assigned			
Q31	Not assigned			
Q32	Not assigned			
Q33	Not assigned			
Q34	Not assigned			
Q35	Not assigned			
Q36	Not assigned			
Q37	Not assigned			
Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W		
R18	Not assigned			
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R21	Not assigned			
R22	Not assigned			
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R24	Not assigned			
R25	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST : OPTION 38 (34.724 MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R29	Not assigned			
R30	Not assigned			
R31	Not assigned			
R32	Not assigned			
R33	Not assigned			
R34	Not assigned			
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R89	Not assigned			
R90	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

PARTS LIST : OPTION 38 (34.724 MHz), T-24

CKT REF	DESCRIPTION	RATING		NOTE
R91	Not assigned			
R92	Not assigned			
R93	Not assigned			
R94	Not assigned			
R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	VCXO,(44X79277U)	23.1493MHz		
Z 2	COIL,(7K9-23MTA)			44246083
Z 3	COIL,(7K9-23MTA)			44246083
Z 4	COIL,(7K9-68MTA)			44246083
Z 5	COIL,(7K9-68MTA)			44246083

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 40 (168.443 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Elect,(CE04W1A470)	47μF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9	Not assigned			
C10	Not assigned			
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C12	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V		
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C14	Elect,(CE04W1V100)	10μF,±20%,35V		
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C20	Not assigned			
C21	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C22	Cer,(CC45CK1H0R5CY)	0.5pF,±0.25pF,50V		
C23	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C24	Elect,(CE04W1V100)	10μF,±20%,35V		
C25	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C26	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C28	Not assigned			
C29	Not assigned			
C30	Cer,(CC45CH1H240JY)	24pF,±5%,50V		
C31	Cer,(CC45CH1H240JY)	24pF,±5%,50V		
C32	Cer,(CC45CH1H160JY)	16pF,±5%,50V		
C33	Cer,(CC45CH1H160JY)	16pF,±5%,50V		
C34	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V		
C35	Cer,(CC45CJ1H030CY)	3pF,±0.25pF,50V		
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Not assigned			
C41	Not assigned			
C42	Not assigned			
C43	Not assigned			
C44	Not assigned			
C45	Cer,(RPE114C105M50)	1μF,±20%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 40 (168.443 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C47	Cer,(CC924CH1H331J)	330pF,±5%,50V		
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C52	Not assigned			
C53	Not assigned			
C54	Not assigned			
C55	Elect,(CE04W1E101)	100μF,±20%,25V		
C56	Elect,(CE04W1E101)	100μF,±20%,25V		
C57	Elect,(CE04W1A101)	100μF,±20%,10V		
C58	Elect,(CE04W1A101)	100μF,±20%,10V		
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62 to C91	Not assigned			
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C96	Not assigned			
C97	Not assigned			
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Plug,(DF1-2P-2.5DSA)	2P		
J 2	Plug,(DF1-2P-2.5DSA)	2P		
J 3	Cable, (HIF23A-16D-AA-20S)			
J 4	Plug,(DF1-2P-2.5DSA)	2P		
J 5	Plug,(DF1-2P-2.5DSA)	2P		
J 6	Not assigned			
J 7	Not assigned			
J 8	Jack,(DF1-2S2.5R24)			
J 9	Jack,(DF1-2S2.5R24)			
J10	Jack,(DF1-2S2.5R24)			
J11	Jack,(DF1-2S2.5R24)			
J12	Jack,(DF1-5S2.5R24)			
J13	Jack,(DF1-5S2.5R24)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 40 (168.443 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
L 1	Coil,(SP0408-220K)	22μH		
L 2	Coil,(SP0408-220K)	22μH		
L 3	Coil,(SP0408-120K)	12μH		
L 4	Coil,(SP0408-220K)	22μH		
L 5	Coil,(SP0408-220K)	22μH		
L 6	Coil,(SP0408-120K)	12μH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Aircore coil	35nH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC,(μPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	Not assigned			
Q 9	IC,(μPC1651G)			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Not assigned			
Q24	Di,(FC52M)			
Q25	IC,(MC1648P)			
Q26	IC,(μPC277C)			
Q27	IC,(MC10H102L)			
Q28	Not assigned			
Q29	Not assigned			
Q30	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 40 (168.443 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
Q31	Not assigned			
Q32	Not assigned			
Q33	Not assigned			
Q34	Not assigned			
Q35	IC,(MC12040L)			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	cf,9ard25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W		
R18	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	Not assigned			
R21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W		
R22	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R23	Not assigned			
R24	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R27	Not assigned			
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R29	Not assigned			
R30	Not assigned			
R31	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R32	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R33	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R34	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 40 (168.443 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W		
R56	CF,(ARD25T111J)	110Ω,±5%,1/4W		
R57	Not assigned			
R58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	XTAL OSC, (44X79277AA VCXO)	28.0738MHz		
Z 2	COIL,(7K9-27MTB)			
Z 3	COIL,(7K9-27MTB)			
Z 4	COIL,(7K9-83MTA)			
Z 5	COIL,(7K9-83MTA)			
Z 6	COIL,(7K9-167MTC)			
Z 7	COIL,(7K9-167MTC)			

( ): Manufacturer's part number
* : Selected at factory

Parts List of OPTION 42 (35.840 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V		
C 2	Elect,(CE04W1A470)	47μF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9	Not assigned			
C10	Not assigned			
C11	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C13	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C14	Elect,(CE04W1V100)	10μF,±20%,35V		
C15	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C16	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C20	Not assigned			
C21	Not assigned			
C22	Not assigned			
C23	Not assigned			
C24	Not assigned			
C25	Not assigned			
C26	Not assigned			
C27	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C28	Not assigned			
C29	Not assigned			
C30	Cer,(CC924CH1H121J)	120pF,±5%,50V		
C31	Cer,(CC924CH1H121J)	120pF,±5%,50V		
C32	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C33	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C34	Cer,(CC45CH1H150JY)	15pF,±5%,50V		
C35	Cer,(CC45CH1H150JY)	15pF,±5%,50V		
C36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C40	Not assigned			
C41	Not assigned			
C42	Not assigned			
C43	Not assigned			
C44	Not assigned			
C45	Cer,(RPE114C10SM50)	1μF,±20%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List of OPTION 42 (35.840 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
C46	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C47	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C48	Cer,(CK924C1H103M)	0.01μF,±20%,50V		
C49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C52	Not assigned			
C53	Not assigned			
C54	Not assigned			
C55	Elect,(CE04W1E101)	100μF,±20%,25V		
C56	Elect,(CE04W1E101)	100μF,±20%,25V		
C57	Elect,(CE04W1A101)	100μF,±20%,10V		
C58	Elect,(CE04W1A101)	100μF,±20%,10V		
C59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C62 to C91	Not assigned			
C92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C94	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C95	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C96	Not assigned			
C97	Not assigned			
C98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
C99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V		
J 1	Plug,(DF1-2P-2.5DSA)	2P		
J 2	Plug,(DF1-2P-2.5DSA)	2P		
J 3	Cable, (HIF2JA-16D-AA20S)			
J 4	Plug, (DF1-2P-2.5DSA)	2P		
J 5	Plug, (DF1-2P-2.5DSA)	2P		
J 6	Not assigned			
J 7	Not assigned			
J 8	Jack,(DF1-2S2.5R24)			
J 9	Jack,(DF1-2S2.5R24)			
J10	Jack,(DF1-2S2.5R24)			
J11	Jack,(DF1-2S2.5R24)			
J12	Jack,(DF1-5S2.5R24)			
J13	Jack,(DF1-5S2.5R24)			

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 42 (35.840 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
L 1	Coil,(LF8-101K)	100μH		
L 2	Coil,(LF8-101K)	100μH		
L 3	Coil,(LF8-560K)	56μH		
L 4	Coil,(LF8-101K)	100μH		
L 5	Coil,(LF8-101K)	100μH		
L 6	Coil,(LF8-560K)	56μH		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L10	Not assigned			
L11	Not assigned			
L12	Not assigned			
L13	Not assigned			
L14	Not assigned			
L15	Coil,(SP0408-R68K)	0.68μH		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC(μPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	IC,(HD10231)			
Q 9	Not assigned			
Q10	IC,(MC10H102L)			
Q11	Not assigned			
Q12	Not assigned			
Q13	Not assigned			
Q14	Not assigned			
Q15	Not assigned			
Q16	Not assigned			
Q17	Tr,(2SC1907)			
Q18	Tr,(2SC1907)			
Q19	IC,(HA3-2525-5)			
Q20	Di,(1S953)			
Q21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q22	IC,(HA3-2525-5)			
Q23	Tr,(2SA836)			
Q24	Di,(FC52M)			
Q25	IC,(MC1648P)			
Q26	IC,(μPC277C)			
Q27	IC,(MC10H102L)			
Q28	Not assigned			

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 42 (35.840 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
Q29	Not assigned			
Q30	Not assigned			
Q31	Not assigned			
Q32	Not assigned			
Q33	Not assigned			
Q34	Not assigned			
Q35	IC,(MC12040L)			
Q36	Not assigned			
Q37	Not assigned			
Q38	Not assigned			
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W		
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W		
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W		
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R10	CF,(ARD25T471J)	470Ω,±5%,1/4W		
R11	Not assigned			
R12	Not assigned			
R13	Not assigned			
R14	Not assigned			
R15	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W		
R17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W		
R18	Not assigned			
R19	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R20	CF,(ARD25T101J)	100Ω,±5%,1/4W		
R21	Not assigned			
R22	Not assigned			
R23	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R24	Not assigned			
R25	Not assigned			
R26	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R27	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R28	Var,MF,(RJ-6P 5kΩ)	5kΩ,1.2W		
R29	Not assigned			
R30	Not assigned			
R31	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R32	CF,(ARD25T820J)	82Ω,±5%,1/4W		
R33	CF,(ARD25T181J)	180Ω,±5%,1/4W		

( ): Manufacturer's part number
* : Selected at factory

Parts List : OPTION 42 (35.840 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
R34	CF,(ARD25T181J)	180Ω,±5%,1/4W		
R35	Not assigned			
R36	Not assigned			
R37	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R38	CF,(ARD25T510J)	51Ω,±5%,1/4W		
R39	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R40	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W		
R43	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R44	Var,MF,(RJ-6P 500Ω)	500Ω,1/2W		
R45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W		
R49	Not assigned			
R50	Not assigned			
R51	Not assigned			
R52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W		
R54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W		
R55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W		
R56	CF,(ARD25T100J)	10Ω,±5%,1/4W		
R57	CF,(ARD25T102J)	1kΩ,±5%,1/4W		
R58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W		
R59	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R60	CF,(ARD25T750J)	75Ω,±5%,1/4W		
R61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W		
R62	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
R63	CF,(ARD25T391J)	390Ω,±5%,1/4W		
R64	CF,(ARD25T131J)	130Ω,±5%,1/4W		
R65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W		
R66 to R95	Not assigned			
R96	Var,MF,(RJ-6P 5kΩ)	5kΩ,1/2W		
Z 1	XTAL OSC, (44X79277P VCXO)	23.8933MHz		
Z 2	COIL,(7K9-24MTC)			
Z 3	COIL,(7K9-24MTC)			
Z 4	COIL,(7K9-71MTA)			
Z 5	COIL,(7K9-71MTA)			

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 43 (35.9391 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 1	Cer,(CK924C1H104M)	0.1µF,±20%,50V		
C 2	Elect,(CE04W1A470)	47µF,±20%,10V		
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 9	Not assigned			
C 10	Not assigned			
C 11	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 12	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V		
C 13	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 14	Elect,(CE04W1V100)	10µF,±20%,35V		
C 15	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 16	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 17	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 18	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 19	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 20	Not assigned			
C 21	Not assigned			
C 22	Not assigned			
C 23	Not assigned			
C 24	Not assigned			
C 25	Not assigned			
C 26	Not assigned			
C 27	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 28	Not assigned			
C 29	Not assigned			
C 30	Cer,(CC924CH1H121J)	120pF,±5%,50V		
C 31	Cer,(CC924CH1H121J)	120pF,±5%,50V		
C 32	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C 33	Cer,(CC924CH1H750J)	75pF,±5%,50V		
C 34	Cer,(CC45CH1H150JY)	15pF,±5%,50V		
C 35	Cer,(CC45CH1H150JY)	15pF,±5%,50V		
C 36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C 37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V		
C 38	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 39	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 40	Not assigned			
C 41	Not assigned			
C 42	Not assigned			
C 43	Not assigned			
C 44	Not assigned			
C 45	Cer,(RPE114C105M50)	1µF,±20%,50V		
C 46	Cer,(CK924C1H472M)	4700pF,±20%,50V		
C 47	Cer,(CC924CH1H102J)	1000pF,±5%,50V		

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 43 (35.9391 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
C 48	Cer,(CK924C1H103M)	0.01µF,±20%,50V		
C 49	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 50	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 51	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 52	Not assigned			
C 53	Not assigned			
C 54	Not assigned			
C 55	Elect,(CE04W1E101)	100µF,±20%,25V		
C 56	Elect,(CE04W1E101)	100µF,±20%,25V		
C 57	Elect,(CE04W1A101)	100µF,±20%,10V		
C 58	Elect,(CE04W1A101)	100µF,±20%,10V		
C 59	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 60	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 61	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 62 to C 91	Not assigned			
C 92	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 93	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 94	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 95	Cer,(CC924CH1H102J)	1000pF,±5%,50V		
C 96	Not assigned			
C 97	Not assigned			
C 98	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
C 99	Cer,(CK924F1H104Z)	0.1µF,+80/-20%,50V		
J 1	Plug,(DF1-2P-2.5DSA)	2pins		
J 2	Plug,(DF1-2P-2.5DSA)	2pins		
J 3	Cable, (HIF23A-16D-AA-20S)			
J 4	Plug,(DF1-2P-2.5DSA)	2pins		
J 5	Plug,(DF1-2P-2.5DSA)	2pins		
J 6	Not assigned			
J 7	Not assigned			
J 8	Jack,(DF1-2S2.5R24)			
J 9	Jack,(DF1-2S2.5R24)			
J 10	Jack,(DF1-2S2.5R24)			
J 11	Jack,(DF1-2S2.5R24)			
J 12	Jack,(DF1-5S2.5R24)			
J 13	Jack,(DF1-5S2.5R24)			
L 1	Coil,(LF8-101K)	100µH,±10%		
L 2	Coil,(LF8-101K)	100µH,±10%		
L 3	Coil,(LF8-560K)	56µH,±10%		
L 4	Coil,(LF8-101K)	100µH,±10%		
L 5	Coil,(LF8-101K)	100µH,±10%		

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 43 (35.9391 MHz), Z4

CKT REF	DESCRIPTION	RATING		NOTE
L 6	Coil,(LF8-560K)	56µH,±10%		
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L 10	Not assigned			
L 11	Not assigned			
L 12	Not assigned			
L 13	Not assigned			
L 14	Not assigned			
L 15	Coil,(SP0408-R68K)	0.68µH,±10%		
Q 1	Tr,(2SA836)			
Q 2	Di,(1S953)			
Q 3	Tr,(2SC1907)			
Q 4	IC,(TD62002P)			
Q 5	IC,(MC10H116L)			
Q 6	IC,(µPC1651G)			
Q 7	IC,(MC10H116L)			
Q 8	IC,(HD10231)			
Q 9	Not assigned			
Q 10	IC,(MC10H102L)			
Q 11	Not assigned			
Q 12	Not assigned			
Q 13	Not assigned			
Q 14	Not assigned			
Q 15	Not assigned			
Q 16	Not assigned			
Q 17	Tr,(2SC1907)			
Q 18	Tr,(2SC1907)			
Q 19	IC,(HA3-2525-5)			
Q 20	Di,(1S953)			
Q 21	Di,breakdown,(RD3.9EB)	3.7 to 4.1V,400mW		
Q 22	IC,(HA3-2525-5)			
Q 23	Tr,(2SA836)			
Q 24	Di,vari-cap,(FC52M)			
Q 25	IC,(MC1648P)			
Q 26	IC,(µPC277C)			
Q 27	IC,(MC10H102L)			
Q 28	Not assigned			
Q 29	Not assigned			
Q 30	Not assigned			
Q 31	Not assigned			
Q 32	Not assigned			
Q 33	Not assigned			
Q 34	Not assigned			
Q 35	IC,(MC12040L)			

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 43 (35.9391 MHz), Z4

CKT REF	DESCRIPTION	RATING	NOTE
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 10	CF,(ARD25T471J)	470Ω,±5%,1/4W	
R 11	Not assigned		
R 12	Not assigned		
R 13	Not assigned		
R 14	Not assigned		
R 15	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R 16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	
R 17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	
R 18	Not assigned		
R 19	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 20	CF,(ARD25T101J)	100Ω,±5%,1/4W	
R 21	Not assigned		
R 22	Not assigned		
R 23	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 24	Not assigned		
R 25	Not assigned		
R 26	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R 27	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 28	CM,var,(RJ-6P 5KΩ)	5kΩ,1/2W	*
R 29	Not assigned		
R 30	Not assigned		
R 31	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 32	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 33	CF,(ARD25T181J)	180Ω,±5%,1/4W	
R 34	CF,(ARD25T181J)	180Ω,±5%,1/4W	
R 35	Not assigned		
R 36	Not assigned		
R 37	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R 38	CF,(ARD25T510J)	51Ω,±5%,1/4W	
R 39	CF,(ARD25T102J)	1.0kΩ,±5%,1/4W	
R 40	CF,(ARD25T102J)	1.0kΩ,±5%,1/4W	
R 41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R 42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	
R 43	CM,var,(RJ-6P 500Ω)	500Ω,1/2W	*
R 44	CM,var,(RJ-6P 500Ω)	500Ω,1/2W	*
R 45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R 46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R 47	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 43 (35.9391 MHz), Z4

CKT REF	DESCRIPTION	RATING	NOTE
R 48	MF,(RN14K2E4641D)	4.64kΩ,±0.5%,1/4W	
R 49	Not assigned		
R 50	Not assigned		
R 51	Not assigned		
R 52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R 53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	
R 54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	
R 55	MF,(RN14K2E4751D)	4.75kΩ,±0.5%,1/4W	
R 56	CF,(ARD25T100J)	10Ω,±5%,1/4W	
R 57	CF,(ARD25T102J)	1.0kΩ,±5%,1/4W	
R 58	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	
R 59	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 60	CF,(ARD25T750J)	75Ω,±5%,1/4W	
R 61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	
R 62	CM,var,(RJ-6P 5KΩ)	5kΩ,1/2W	*
R 63	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 64	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	
R 66 to R 95	Not assigned		
R 96	CM,var,(RJ-6P 5KΩ)	5kΩ,1/2W	*
Z 1	XTAL OSC, (44X79277AD VCXO)	23.9594MHz	
Z 2	Coil,(7K9-24MTC)		
Z 3	Coil,(7K9-24MTC)		
Z 4	Coil,(7K9-71MTA)		
Z 5	Coil,(7K9-71MTA)		

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 44 (155.520 MHz), Z4

CKT REF	DESCRIPTION	RATING	Qty	NOTE
C 1	Cer,(CK924C1H104M)	0.1μF,±20%,50V	1	
C 2	Elect,(CE04W1A470)	47μF,±20%,10V	1	
C 3	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 4	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 5	Cer,(CC45CK1H020CY)	2pF,±0.25pF,50V	1	
C 6	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 7	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 8	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 9	Not assigned			
C 10	Not assigned			
C 11	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 12	Cer,(CC45CK1H010CY)	1pF,±0.25pF,50V	1	
C 13	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 14	Elect,(CE94W1V100)	10μF,±20%,35V	1	
C 15	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 16	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 17	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 18	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 19	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 20	Not assigned			
C 21	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 22	Cer,(CC45CK1H0R5CY)	0.5pF,±0.25pF,50V	1	
C 23	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 24	Elect,(CE04W1V100)	10μF,±20%,35V	1	
C 25	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 26	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 27	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 28	Not assigned			
C 29	Not assigned			
C 30	Cer,(CC45CH1H390JY)	39pF,±5%,50V	1	
C 31	Cer,(CC45CH1H390JY)	39pF,±5%,50V	1	
C 32	Cer,(CC45CH1H240JY)	24pF,±5%,50V	1	
C 33	Cer,(CC45CH1H240JY)	24pF,±5%,50V	1	
C 34	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	1	
C 35	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	1	
C 36	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	1	
C 37	Cer,(CC45CH1H050CY)	5pF,±0.25pF,50V	1	
C 38	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 39	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 40	Not assigned			
C 41	Not assigned			
C 42	Not assigned			
C 43	Not assigned			
C 44	Not assigned			
C 45	Cer,(RPE114C105M50)	1μF,±20%,50V	1	
C 46	Cer,(CK924C1H472M)	4700pF,±20%,50V	1	
C 47	Cer,(CC924CH1H331J)	330pF,±5%,50V	1	

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 44 (155.520 MHz), Z4

CKT REF	DESCRIPTION	RATING	Qty	NOTE
C 48	Cer,(CK924C1H103M)	0.01μF,±20%,50V	1	
C 49	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 50	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 51	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 52	Not assigned			
C 53	Not assigned			
C 54	Not assigned			
C 55	Elect,(CE04W1E101)	100μF,±20%,25V		
C 56	Elect,(CE04W1E101)	100μF,±20%,25V	1	
C 57	Elect,(CE04W1A101)	100μF,±20%,10V	1	
C 58	Elect,(CE04W1A101)	100μF,±20%,10V	1	
C 59	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 60	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 61	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 62	Not assigned			
C 63	Not assigned			
C 64	Not assigned			
C 65	Not assigned			
C 66	Not assigned			
C 67	Not assigned			
C 68	Not assigned			
C 69	Not assigned			
C 70	Not assigned			
C 71	Not assigned			
C 72	Not assigned			
C 73	Not assigned			
C 74	Not assigned			
C 75	Not assigned			
C 76	Not assigned			
C 77	Not assigned			
C 78	Not assigned			
C 79	Not assigned			
C 80	Not assigned			
C 81	Not assigned			
C 82	Not assigned			
C 83	Not assigned			
C 84	Not assigned			
C 85	Not assigned			
C 86	Not assigned			
C 87	Not assigned			
C 88	Not assigned			
C 89	Not assigned			
C 90	Not assigned			
C 91	Not assigned			
C 92	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 93	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 94	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 44 (155.520 MHz), Z4

CKT REF	DESCRIPTION	RATING	Qty	NOTE
C 95	Cer,(CC924CH1H102J)	1000pF,±5%,50V	1	
C 96	Not assigned			
C 97	Not assigned			
C 98	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
C 99	Cer,(CK924F1H104Z)	0.1μF,+80/-20%,50V	1	
J 1	Plug,(DF1-2P-2.5DSA)	2P	1	
J 2	Plug,(DF1-2P-2.5DSA)	2P	1	
J 3	Cable, (CNF23-16D-AA-20S)		1	
J 4	Plug,(DF1-2P-2.5DSA)	2P	1	
J 5	Plug,(DF1-2P-2.5DSA)	2P	1	
J 6	Not assigned			
J 7	Not assigned			
J 8	Jack,(DF1-2S2.5R24)	2P	1	
J 9	Jack,(DF1-2S2.5R24)	2P	1	
J 10	Jack,(DF1-2S2.5R24)	2P	1	
J 11	Jack,(DF1-2S2.5R24)	2P	1	
J 12	Jack,(DF1-5S2.5R24)	5P	1	
J 13	Jack,(DF1-5S2.5R24)	5P	1	
L 1	Coil,(SP0408-330K)	33μH,±10%	1	
L 2	Coil,(SP0408-330K)	33μH,±10%	1	
L 3	Coil,(SP0408-150K)	15μH,±10%	1	
L 4	Coil,(SP0408-330K)	33μH,±10%	1	
L 5	Coil,(SP0408-330K)	33μH,±10%	1	
L 6	Coil,(SP0408-150K)	15μH,±10%	1	
L 7	Not assigned			
L 8	Not assigned			
L 9	Not assigned			
L 10	Not assigned			
L 11	Not assigned			
L 12	Not assigned			
L 13	Not assigned			
L 14	Not assigned			
L 15	Air-core coil, (34L74433C)	43nH	1	
Q 1	Tr,(2SA836)		1	
Q 2	Di,(1S953)		1	
Q 3	Tr,(2SC1907)		1	
Q 4	IC,(TD62002P)		1	
Q 5	IC,(MC10H116L)		1	
Q 6	IC,(μPC1651G)		1	
Q 7	IC,(MC10H116L)		1	

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 44 (155.520 MHz), Z4

CKT REF	DESCRIPTION	RATING	Qty	NOTE
Q 8	Not assigned			
Q 9	IC,(μPC1651G)		1	
Q 10	IC,(MC10H102L)			
Q 11	Not assigned			
Q 12	Not assigned			
Q 13	Not assigned			
Q 14	Not assigned			
Q 15	Not assigned			
Q 16	Not assigned			
Q 17	Tr,(2SC1907)		1	
Q 18	Tr,(2SC1907)		1	
Q 19	IC,(HA3-2525-5)		1	
Q 20	Di,(1S953)		1	
Q 21	Di,breakdown, (RD3.9EB)		1	
Q 22	IC,(HA3-2525-5)		1	
Q 23	Not assigned			
Q 24	Di,Vari-cap,(PC52M)		1	
Q 25	IC,(MC1648P)		1	
Q 26	IC,(μPC277C)		1	
Q 27	IC,(MC10H102L)		1	
Q 28	Not assigned			
Q 29	Not assigned			
Q 30	Not assigned			
Q 31	Not assigned			
Q 32	Not assigned			
Q 33	Not assigned			
Q 34	Not assigned			
Q 35	IC,(MC12040L)		1	
R 1	MF,(RN14K2E1003D)	100kΩ,±0.5%,1/4W	1	
R 2	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	1	
R 3	CF,(ARD25T332J)	3.3kΩ,±5%,1/4W	1	
R 4	CF,(ARD25T272J)	2.7kΩ,±5%,1/4W	1	
R 5	CF,(ARD25T101J)	100Ω,±5%,1/4W	1	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	1	
R 7	CF,(ARD25T151J)	150Ω,±5%,1/4W	1	
R 8	CF,(ARD25T471J)	470Ω,±5%,1/4W	1	
R 9	CF,(ARD25T471J)	470Ω,±5%,1/4W	1	
R 10	CF,(ARD25T471J)	470Ω,±5%,1/4W	1	
R 11	Not assigned			
R 12	Not assigned			
R 13	Not assigned			
R 14	Not assigned			
R 15	CF,(ARD25T510J)	51Ω,±5%,1/4W	1	
R 16	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	1	

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 44 (155.520 MHz), Z4

CKT REF	DESCRIPTION	RATING	Qty	NOTE
R 17	MF,(RN14K2E5490D)	549Ω,±0.5%,1/4W	1	
R 18	CF,(ARD25T101J)	100Ω,±5%,1/4W	1	
R 19	CF,(ARD25T101J)	100Ω,±5%,1/4W	1	
R 20	Not assigned			
R 21	MF,(RN14K2E1821D)	1.82kΩ,±0.5%,1/4W	1	
R 22	CF,(ARD25T391J)	390Ω,±5%,1/4W	1	
R 23	Not assigned			
R 24	CF,(ARD25T510J)	51Ω,±5%,1/4W	1	
R 25	CF,(ARD25T682J)	6.8kΩ,±5%,1/4W	1	
R 26	CF,(ARD25T510J)	51Ω,±5%,1/4W	1	
R 27	Not assigned			
R 28	Var,MF,(RJ-6P5KΩ)	5kΩ,1/2W	1	*
R 29	Not assigned			
R 30	Not assigned			
R 31	CF,(ARD25T820J)	82Ω,±5%,1/4W	1	
R 32	CF,(ARD25T820J)	82Ω,±5%,1/4W	1	
R 33	CF,(ARD25T181J)	180Ω,±5%,1/4W	1	
R 34	CF,(ARD25T181J)	180Ω,±5%,1/4W	1	
R 35	Not assigned			
R 36	Not assigned			
R 37	CF,(ARD25T510J)	51Ω,±5%,1/4W	1	
R 38	CF,(ARD25T510J)	51Ω,±5%,1/5W	1	
R 39	CF,(ARD25T102J)	1.0kΩ,±5%,1/4W	1	
R 40	CF,(ARD25T102J)	1.0kΩ,±5%,1/4W	1	
R 41	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	1	
R 42	CF,(ARD25T392J)	3.9kΩ,±5%,1/4W	1	
R 43	Var,MF,(RJ-6P500Ω)	500Ω,1/2W	1	*
R 44	Var,MF,(RJ-6P500Ω)	500Ω,1/2W	1	*
R 45	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	1	
R 46	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	1	
R 47	MF,(RN14K2E641D)	4.64kΩ,±0.5%,1/4W	1	
R 48	MF,(RN14K2E641D)	4.64kΩ,±0.5%,1/4W	1	
R 49	Not assigned			
R 50	Not assigned			
R 51	Not assigned			
R 52	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	1	
R 53	MF,(RN14K2E2151D)	2.15kΩ,±0.5%,1/4W	1	
R 54	MF,(RN14K2E1101D)	1.10kΩ,±0.5%,1/4W	1	
R 55	MF,(RN14K2E1151D)	1.15kΩ,±0.5%,1/4W	1	
R 56	CF,(ARD25T111J)	110Ω,±5%,1/4W	1	
R 57	Not assigned			
R 58	CF,(ARD25T122J)	1.2kΩ,±5%,1/4W	1	
R 59	CF,(ARD25T391J)	390Ω,±5%,1/4W	1	
R 60	CF,(ARD25T750J)	75Ω,±5%,1/4W	1	
R 61	CF,(ARD25T152J)	1.5kΩ,±5%,1/4W	1	
R 62	Var,MF,(RJ-6P5KΩ)	5kΩ,1/2W	1	*
R 63	CF,(ARD25T391J)	390Ω,±5%,1/4W	1	

( ): Manufacturer's part number
* : Selected at factory

Parts List: OPTION 44 (155.520 MHz), Z4

CKT REF	DESCRIPTION	RATING	Qty	NOTE
R 64	CF,(ARD25T131J)	130Ω,±5%,1/4W	1	
R 65	CF,(ARD25T472J)	4.7kΩ,±5%,1/4W	1	
R 66	Not assigned			
R 67	Not assigned			
R 68	Not assigned			
R 69	Not assigned			
R 70	Not assigned			
R 71	Not assigned			
R 72	Not assigned			
R 73	Not assigned			
R 74	Not assigned			
R 75	Not assigned			
R 76	Not assigned			
R 77	Not assigned			
R 78	Not assigned			
R 79	Not assigned			
R 80	Not assigned			
R 81	Not assigned			
R 82	Not assigned			
R 83	Not assigned			
R 84	Not assigned			
R 85	Not assigned			
R 86	Not assigned			
R 87	Not assigned			
R 88	Not assigned			
R 89	Not assigned			
R 90	Not assigned			
R 91	Not assigned			
R 92	Not assigned			
R 93	Not assigned			
R 94	Not assigned			
R 95	Not assigned			
R 96	Var,MF,(RJ-6P5KΩ)	5kΩ,1/2W	1	*
Z 1	XTAL OSC, (44X79277AE VCXO)	25.920MHz	1	
Z 2	Coil,(7K9-25MTB)		1	
Z 3	Coil,(7K9-25MTB)		1	
Z 4	Coil,(7K9-76MTD)		1	
Z 5	Coil,(7K9-76MTD)		1	
Z 6	Coil,(7K9-153MTB)		1	
Z 7	Coil,(7K9-153MTB)		1	

( ): Manufacturer's part number
* : Selected at factory

APPENDIX 2

EXT PATTERN (T-Z15) CIRCUIT DIAGRAM AND PARTS LIST

OPTION 04 (EXTERNAL DATA) is an optional unit for the ME520B (Tx), which performs simultaneously or separately, error insertion, code conversion and jitter modulation for external arbitrary NRZ pattern data and CLOCK signals.

To perform sufficient jitter modulation up to 10 UIp-p, first, the input serial data is demultiplexed into 16 parallel data in the EXT PATTERN (T-Z15) PC board, then jitter modulation is applied to the demultiplexed 1/16 speed data. Next, the 16 parallel data are multiplexed 8 times and sent to the ME520B (Tx) PATTERN GENERATOR (T-Z3) as A and B 2 output data.

Subsequently, error insertion and code conversion are performed in the ME520B (Tx) similar to the ME520B originaly generating pattern.

Name	Z No.	Circuit diagram drawing No.	Parts list drawing No.
EXT PATTERN	T-Z15	43W34355	44W84788

43W34355 2/2

APPLICATION

REVISIONS

Q10 MC10H176L
Q11 MC10H176L
Q12 MC10H176L
Q13 MC10H176L
Q14 MC10H176L
Q15 MC10H176L
Q16 MC10H176L
Q17 MC10H176L
Q18 MC10H176L
R41 330×6
R43 330×6
R45 330×6
R46 470×6
R47 470×6
R48 470×6
R40 220×6
R42 220×6
R44 220×6
-5.2V
R34 ← DATA
D01 D02 D03 D04 D05
D11 D12 D13 D14 D15
D21 D22 D23
DD15 DD14 DD13 DD12 DD11 DD10
DD9 DD8 DD7 DD6 DD5 DD4
DD3 DD2 DD1 DD0
R10 ← CLK
R11 ← C/16
R30 ← D

Q19 MC10H164L
Q20 MC10H164L
R49 470×8
R50 470×8
R51 560
R52 560
Q21 MC10H131L
Q21
DD15 DD13 DD11 DD9 DD7 DD5 DD3 DD1
DD14 DD12 DD10 DD8 DD6 DD4 DD2 DD0
J6 BDATA
J7 ADATA
R29 ← D
R28 ← C
R27 ← B
R26 ← A

Z10-J7
J9
J8
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 0.1
C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 0.1
-5.2V

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH	NOTE

CHECKED BY | TRACED BY | SCALE
APPROVED BY | DRAWN BY

DEP

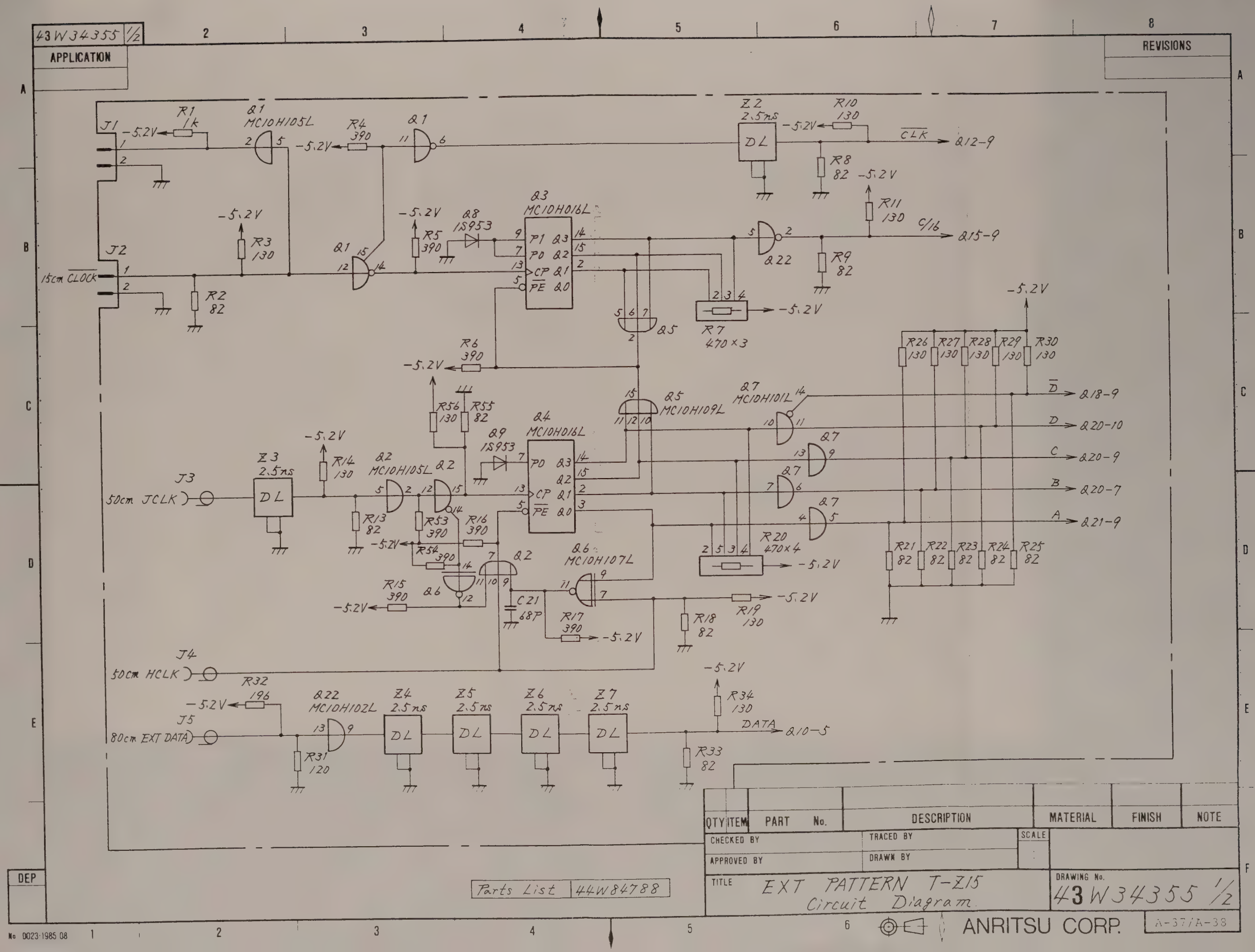
TITLE EXT PATTERN T-Z15 Circuit Diagram.

DRAWING No. 43W34355 2/2

ANRITSU CORP.

A-39/A-40

No 0023-1985 08


43W34355 1/2
APPLICATION
REVISIONS
J1
J2
15cm CLOCK
J3
50cm JCLK
J4
50cm HCLK
J5
80cm EXT DATA
Q1 MC10H105L
Q2 MC10H105L
Q3 MC10H016L
Q4 MC10H016L
Q5 MC10H109L
Q6 MC10H107L
Q7 MC10H101L
Q22 MC10H102L
Z2 2.5ns
Z3 2.5ns
Z4 2.5ns
Z5 2.5ns
Z6 2.5ns
Z7 2.5ns
Q8 1S953
Q9 1S953
R7 470×3
R20 470×4
C21 68P
CLK
Q12-9
C/16
Q15-9
D
Q18-9
D
Q20-10
C
Q20-9
B
Q20-7
A
Q21-9
DATA
Q10-5
-5.2V
Parts List 44W84788
QTY ITEM PART No. DESCRIPTION MATERIAL FINISH NOTE
CHECKED BY
TRACED BY
SCALE
APPROVED BY
DRAWN BY
TITLE EXT PATTERN T-Z15 Circuit Diagram
DRAWING No. 43W34355 1/2
ANRITSU CORP.
A-37/A-38
DEP
No 0023-1985 08

Parts List: EXT PATTERN T-Z15

CKT REF	DESCRIPTION	RATING	NOTE
C 1 to C 20	Cer,(CK924F1H104Z)	0.1uF,+80/-20%,50V	
C 21	Cer,(CC924CH1H680J)	68pF,±5%,50V	
J 1	Connector, (DF1-2P2.5DSA)		
J 2	Connector, (DF1-2P2.5DSA)		
J 3	Connector,(27DP-LR-PC)		
J 4	Connector,(27DP-LR-PC)		
J 5	Connector, (MP2.5CLR-PC)		
J 6	Connector,(27DP-LR-PC)		
J 7	Connector,(27DP-LR-PC)		
J 8	Connector, (DF1-8P2.5DSA)		
J 9	Connector, (DF1-8S2.5R24)		
J 10	Connector, (BNC-PJ-2.5C-2V)		
J 11	Connector,(MP2.5CP)		
J 12	Connector, (DF1-2S2.5R24)		
J 13	Connector, (DF1-2S2.5R24)		
Q 1	IC,(MC10H105L)		
Q 2	IC,(MC10H105L)		
Q 3	IC,(MC10H016L)		
Q 4	IC,(MC10H016L)		
Q 5	IC,(MC10H109L)		
Q 6	IC,(MC10H107L)		
Q 7	IC,(MC10H101L)		
Q 8	Di,(1S953)		
Q 9	Di,(1S953)		
Q 10	IC,(MC10H176L)		
Q 11	IC,(MC10H176L)		
Q 12	IC,(MC10H176L)		
Q 13	IC,(MC10H176L)		
Q 14	IC,(MC10H176L)		
Q 15	IC,(MC10H176L)		
Q 16	IC,(MC10H176L)		
Q 17	IC,(MC10H176L)		
Q 18	IC,(MC10H176L)		
Q 19	IC,(MC10H164L)		

( ): Manufacturer's part number
* : Selected at factory

Parts List: EXT PATTERN T-Z15

CKT REF	DESCRIPTION	RATING	NOTE
Q 20	IC,(MC10H164L)		
Q 21	IC,(MC10H131L)		
Q 22	IC,(MC10H102L)		
R 1	CF,(ARD25T102J)	1.0kΩ,±5%,1/4W	
R 2	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 3	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 4	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 5	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 6	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 7	SIP type,(RRS-4-471JA)	470Ω x 4,±5%,1/8W	
R 8	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 9	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 10	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 11	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 12	Not assigned		
R 13	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 14	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 15	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 16	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 17	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 18	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 19	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 20	SIP type,(RRS-4-471JA)	470Ω x 4,±5%,1/8W	
R 21	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 22	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 23	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 24	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 25	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 26	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 27	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 28	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 29	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 30	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 31	CF,(ARD25T121J)	120Ω,±5%,1/4W	
R 32	MF,(RN14K2E1960D)	196Ω,±0.5%,1/4W	
R 33	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 34	CF,(ARD25T131J)	130Ω,±5%,1/4W	
R 35	Not assigned		
R 36	Not assigned		
R 37	Not assigned		
R 38	Not assigned		
R 39	Not assigned		
R 40	SIP type,(RRS-6-221JA)	220Ω x 6,±5%,1/8W	
R 41	SIP type,(RRS-6-331JA)	330Ω x 6,±5%,1/8W	
R 42	SIP type,(RRS-6-221JA)	220Ω x 6,±5%,1/8W	

( ): Manufacturer's part number
* : Selected at factory

Parts List: EXT PATTERN T-Z15

CKT REF	DESCRIPTION	RATING	NOTE
R 43	SIP type,(RRS-6-331JA)	330Ω x 6,±5%,1/8W	
R 44	SIP type,(RRS-6-221JA)	220Ω x 6,±5%,1/8W	
R 45	SIP type,(RRS-6-331JA)	330Ω x 6,±5%,1/8W	
R 46	SIP type,(RRS-6-471JA)	470Ω x 6,±5%,1/8W	
R 47	SIP type,(RRS-6-471JA)	470Ω x 6,±5%,1/8W	
R 48	SIP type,(RRS-6-471JA)	470Ω x 6,±5%,1/8W	
R 49	SIP type,(RRS-8-471JA)	470Ω x 8,±5%,1/8W	
R 50	SIP type,(RRS-8-471JA)	470Ω x 8,±5%,1/8W	
R 51	CF,(ARD25T561J)	560Ω,±5%,1/4W	
R 52	CF,(ARD25T561J)	560Ω,±5%,1/4W	
R 53	CF,(ARD25T391J)	390Ω,±5%,1/4W	
R 54	CF,(ARD25T561J)	560Ω,±5%,1/4W	
R 55	CF,(ARD25T820J)	82Ω,±5%,1/4W	
R 56	CF,(ARD25T131J)	130Ω,±5%,1/4W	
W 1	Connector,(27DP-P-P)		
W 2	Connector,(27DP-P-P)		
W 3	Connector,(27DP-P-P)		
W 4	Connector,(27DP-P-P)		
Z 1	Not assigned		
Z 2	Delay Line, (DE4A-500T-25-D2)		
Z 3	Delay Line, (DE4A-500T-25-D2)		
Z 4	Delay Line, (DE4A-500T-25-D2)		
Z 5	Delay Line, (DE4A-500T-25-D2)		
Z 6	Delay Line, (DE4A-500T-25-D2)		
Z 7	Delay Line, (DE4A-500T-25-D2)		

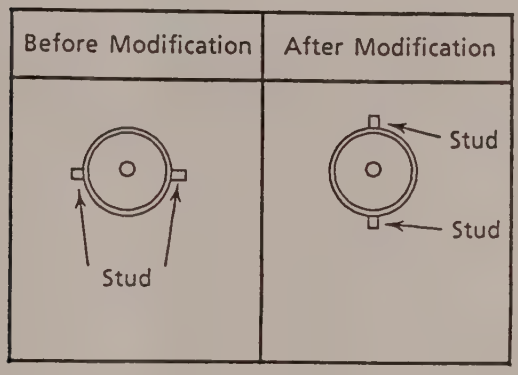
( ): Manufacturer's part number
* Selected at factory

MANUAL CHANGE

Option 01(built-in printer) is included with the ME520B as standard equipment.

BNC-TYPE CONNECTOR INSTALLATION

The BNC-type connector installation has been modified as follows:



ERRATA

ITEM	DESCRIPTION	
	ERROR	CORRECT
PARTS LIST		
	Battery, (ER-6)	Battery with resistor, (S49Z10069C)

HISTORY OF MODIFICATIONS
(ME520B Ser.)

JUN. 1 '92

ITEM	DESCRIPTION		Applicable Serial No.
	Before Modification	After Modification	
P.4-27	Parts List: R-Z4,INPUT (44W84801 10/11)		
	R199 MF,(ARD25T104J) 100KΩ,±5%,1/4W	R199 MF,(ARD25T224J) 220KΩ,±5%,1/4W	
P.3-151/ 3-152	R-Z4 INPUT CIRCUIT DIAGRAM (43W34336 1/1)		
	R199 14.5K to 16.9K	R199 220K	
P.4-29	Parts List: R-Z5,CMI (44W84802 7/7)		
	Z5 DELAY LINE,(FDY4005) 4nS	Z5 DELAY LINE,(DFS020S) 4nS Note: *80cm	
P.3-165/ 3-166	R-Z5 CMI CIRCUIT DIAGRAM		
	43W34337 1/1 M-1	43W34337 1/1 M-2	
P.4-15	Parts List: T-Z3,PATTERN GENERATOR (44W84793 4/9)		
	R18 CF,(ARD25T681J) 680Ω,±5%,1/4W	R18 CF,(ARD25T131J) 130Ω,±5%,1/4W	
P.4-16	Parts List: T-Z3,PATTERN GENERATOR (44W84793 9/9)		
	R219 Not labeled	R219 CF,(ARD25T820J) 82Ω,±5%,1/4W	
P.3-75/ 3-76	T-Z3 PATTERN GENERATOR CIRCUIT DIAGRAM		
	43W34328 2/3	43W34328 2/3 M-1	From M67591

(Blank)

APPLICATION

REVISIONS

43W34337 1/1

Pc Board	422U12357
Parts List	44W84802

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY		TRACED BY		SCALE	M-2
APPROVED BY		DRAWN BY			
TITLE	R-35 CMI CIRCUIT DIAGRAM			DRAWING No.	43W34337 1/1

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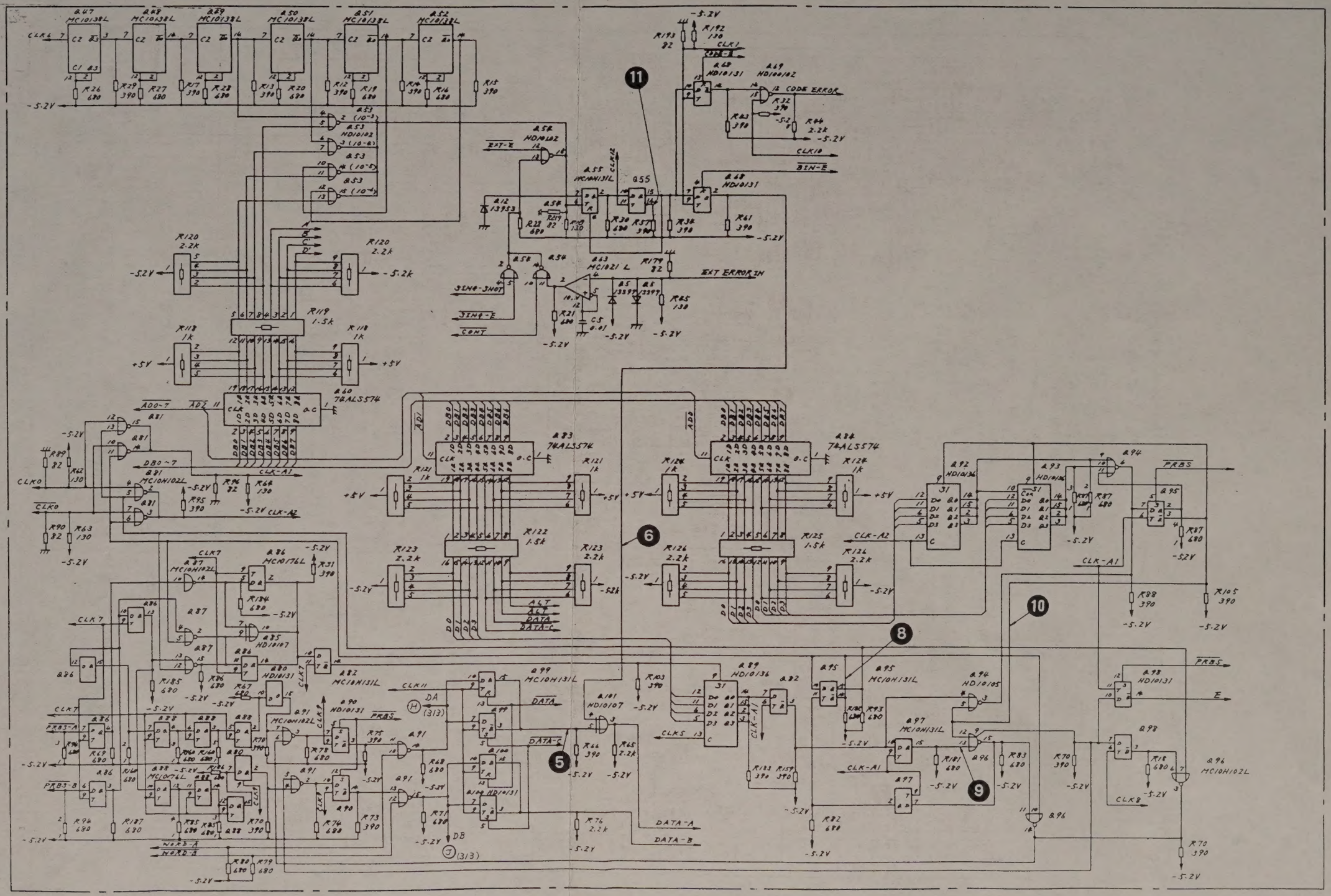
APPLICATION

REVISIONS



⑦ : not assigned

QTY	ITEM	PART No.	DESCRIPTION	MATERIAL	FINISH
CHECKED BY		TRACED BY		SCALE	4
APPROVED BY		DRAWN BY		M-1	

TITLE: T-Z3 PATTERN GENERATOR CIRCUIT DIAGRAM

DRAWING No: 43W34328 2/3

DEP

MP MASTER
MA35817